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Quartermaster
FM 10-16

DEPARTMENT OF THE ARMY FIELD MANUAL

**QUARTERMASTER
LAUNDRY COMPANY
SEMIMOBILE**

DEPARTMENT OF THE ARMY • JUNE 1950

DEPARTMENT OF THE ARMY FIELD MANUAL

FM 10-16

This manual supersedes TM 10-352 • March 1943

QUARTERMASTER LAUNDRY COMPANY SEMIMOBILE



DEPARTMENT OF THE ARMY • JUNE 1950

United States Government Printing Office
Washington: 1950

DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., 6 June 1950

Field Manual 10-16 is published for the information and guidance of all concerned.

[AG 322 (10 Nov 49)]

BY ORDER OF THE SECRETARY OF THE ARMY:

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DISTRIBUTION:

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For explanation of distribution formula, see SR 310-90-1.

CONTENTS

	<i>Paragraph</i>	<i>Page</i>
CHAPTER 1. INTRODUCTION		
<i>Section I.</i> General.....	1-2	1
<i>II.</i> The unit	3-5	1
CHAPTER 2. TRAINING		
<i>Section I.</i> Training of individuals.....	7-9	7
<i>II.</i> Unit training.....	10-11	13
CHAPTER 3. ORGANIZATION AND EQUIPMENT		
<i>Section I.</i> Organization.....	12-14	15
<i>II.</i> Equipment.....	15-16	15
<i>III.</i> Maintenance.....	17-22	21
CHAPTER 4. DUTIES OF PERSONNEL		
<i>Section I.</i> General description.....	23-25	25
<i>II.</i> Setting up and taking down equipment.....	26-27	31
CHAPTER 5. PREPARATION FOR OPERATIONS		
<i>Section I.</i> Reconnaissance and site selection..	28-29	36
<i>II.</i> Planning for operations.....	30-31	38
CHAPTER 6. OPERATION OF THE UNIT		
<i>Section I.</i> Methods of operating.....	32-40	45
<i>II.</i> Records and reports.....	41-43	56
<i>III.</i> Obtaining technical operating supplies.....	44-46	58
<i>IV.</i> Opening-up, taking-over, and closing-out operations.....	47-49	59

	<i>Paragraph</i>	<i>Page</i>
CHAPTER 7. SECURITY AND CAMOUFLAGE	50-51	62
CHAPTER 8. MOVEMENT		
<i>Section I.</i> Movement by motor.....	52-53	65
<i>II.</i> Movement by rail.....	54-56	73
<i>III.</i> Movement by air.....	57-58	79
CHAPTER 9. SAFETY PRECAUTIONS AND FIELD EXPEDIENTS	59-60	83
CHAPTER 10. DEMOLITION OF MATÉRIEL TO PREVENT ENEMY USE	61-63	86
APPENDIX I. REFERENCES		88
II. TABULATED DATA		93
III. FORMULAS		94
IV. SAMPLE FORMS		97
V. BLOCKING AND BRACING FOR RAIL SHIPMENT		99
VI. UNIT PROFICIENCY STANDARDS		102
VII. GLOSSARY		105
INDEX		108

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1. PURPOSE. This manual is intended to provide information necessary for the efficient functioning of the Quartermaster Laundry Company, Semimobile (T/O&E 10-167).

2. SCOPE. **a.** The manual covers the mission, organization, and operation of the quartermaster laundry company, semimobile, together with the functioning of the semimobile laundry platoon and section when the latter operate as separate units. The manual does not include complete technical operative and maintenance information. For detailed information on the mechanical operation and maintenance of the mobile laundry, see TM 10-1680.

b. The information given in this manual will also be helpful to laundry detachments organized under T/O&E 10-500.

Section II. THE UNIT

3. MISSION: The mission of the quartermaster laundry company, semimobile, is to provide field laundry service for personnel and for reclamation installations, as well as a limited amount of service for the decontamination of clothing and equipment.

MISSION OF A QM LAUNDRY CO. (SEMI-MOBILE) IN A THEATRE OF OPERATIONS

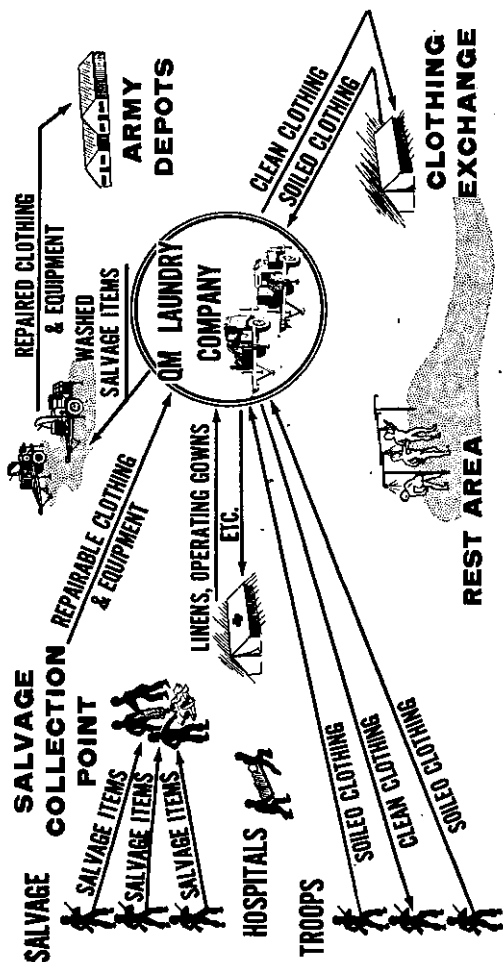


Figure 1. Mission of the company.

4. ASSIGNMENT AND CONTROL. a. General. In the theater of operations the mobile laundry company is assigned or attached to a communications zone, army, or separate corps headquarters in accordance with the need for its services. It operates under the supervision of the quartermaster of the command. A company assigned to one of these higher headquarters operates in the following ways:

- (1) As an attachment to a quartermaster battalion headquarters, which supervises and coordinates the administration, training, operation, and supply of the companies under its jurisdiction.
- (2) As a separate company.
- (3) As separate platoons.
- (4) As separate sections.

b. Normal assignment. The normal assignment is attachment to a quartermaster battalion which, in turn, may be attached to a quartermaster group, for support of army, corps, or other troops.

c. Assignment in stabilized situations. In stabilized situations the laundry company assigned to a command may be attached to a quartermaster battalion or not, as the situation requires.

d. Attachment in island or small land mass operations. The laundry company may be attached directly to a division or to the task force in operations where only a comparatively small number of line troops are involved. The employment of a mobile laundry unit attached to a task force will be at the direction of the commanding general of the force.

e. Attachment as separate platoons or separate sections. When the components of the mobile laundry company in the theater of operations are deployed,

the various subdivisions of the company (attached, as they will be, to GHQ, army, corps, division, similar units, or field hospitals) must be attached by the commander of the force or installation to a unit under his jurisdiction for personnel administration. Normally, the commander also will order the attachment of the laundry unit to another company of his command for supply, mess, and company administration. The housekeeping function generally will be carried on by personnel of the company to which the laundry unit is attached. In situations where the components of the laundry company are sufficiently close together, company administrative matters may be cleared through the company headquarters. However, when the company is deployed, each part of the laundry company will be more or less self-sufficient and will be responsible, not to the commanding officer of the company, but to the higher administrative unit to which it is attached.

5. RELATED UNITS. a. Reclamation and maintenance installations. The laundry company may work with a quartermaster reclamation and maintenance company (T/O&E 10-237) to launder material for reclamation.

b. Clothing exchange and bath unit. The laundry unit and a clothing exchange and bath unit may work together. This unit is set up as far forward as possible to provide combat troops with baths and clean clothing. After the men have passed through the bath unit and received clean clothing, any serviceable clothing collected from them is laundered, resized, and placed in stock to be issued to other men using the clothing exchange and bath unit. Clothing that is

unserviceable but repairable is laundered and sent to a reclamation and maintenance unit.

c. Medical Corps installations. Normally, laundry units are organic to hospitals; however, the mobile laundry may do work for a hospital or other Medical Corps installation when adequate laundry facilities are not otherwise available. The administrative, mess, and supply requirements of the laundry unit will normally be provided for by the hospital.

d. Laundry detachments organized under T/O&E 10-500. The mobile laundry teams provided by T/O&E 10-500 are adequate to operate one mobile laundry and should be used when an operating unit smaller than a platoon of a quartermaster laundry company is required.

e. Fixed units. In theaters of operations fixed laundry facilities may be requisitioned to furnish laundry service to troops and installations. These fixed laundries usually are operated by civilians or by prisoners of war. Experienced supervisory personnel will be provided by laundry companies or by the detachments listed in **d** above.

6. CAPABILITIES. **a.** The mobile laundry company is designed to provide field laundry service for 33,600 men weekly when operating on two 8-hour shifts, 7 days a week. On the same basis, the platoon can service 8,400; the section, 2,100. The above estimate is based on an average bundle weight of approximately 5½ pounds per man per week.

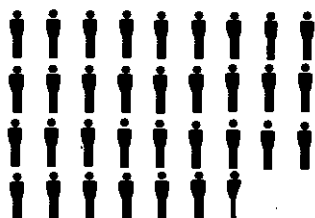
b. When not processing individual bundles, the laundry company can launder the weekly clothing reclamation expectancy for 384,000 troops; the platoon, 96,000; and the section, 24,000.

c. When decontamination operations are required, the capacities listed above necessarily will be reduced in proportion to the additional time required.

CAPABILITIES OF A LAUNDRY CO.

OPERATING TWO 8-HOUR SHIFTS DAILY

COMPANY...33,600 MEN



***184,800 LBS**

PLATOON...8,400 MEN



***42,000 LBS**

SECTION...2,100 MEN



***11,550 LBS**

***BASED ON 5 1/2 LBS PER WEEK PER MAN**

Figure 2. Capabilities of the company.

CHAPTER 2

TRAINING

Section I. TRAINING OF INDIVIDUALS

7. GENERAL. The purpose of the training period is to produce a well-trained mobile laundry company ready for field duty. Because field conditions are in a constant state of flux, an elastic organization is essential. For this reason personnel should be trained to perform both the duties assigned to them and the duties of at least one other member of the laundry company. While training should continue after the company goes into the field, there is rarely an opportunity for comprehensive training. The company commander and key personnel must utilize the training time in the zone of the interior to bring the efficiency of the company to the highest degree possible.

8. SCHOOL TRAINING. When time and circumstances permit, all personnel should take advantage of the training and refresher courses available. By contacting the appropriate S-3 officer, the company commander can learn what courses (both training and refresher) that pertain to his company personnel are available, the length of courses, and the planned frequency of classes.

9. UNIT SCHOOLS. a. General. The company commander (under the directions of the appropriate battalion S-3) will prepare training schedules as prescribed in FM 21-5. These schedules will use the army training program as a guide but will utilize the local training facilities as far as possible. Training will be conducted in accordance with Department of the Army methods presented in FM 21-5, TM 21-250, and TF 7-295. The policies and procedures prescribed in MTP 10 series or other appropriate training programs will be followed by all units activated.

b. Training programs.

- (1) *Progress chart.* The degree of training and the nature of the training received by the personnel prior to their assignment to the company will vary greatly. Accordingly, the commanding officer should make a detailed study of the training each man has had and then devise a plan which will overcome individual deficiencies. He should prepare a chart on which will be listed the names of the company personnel and the various phases of the training program. The subjects each man has completed can be checked off opposite his name. This will prevent unnecessary duplication of certain phases of the program and permit each man to concentrate his energies on the training in which he is deficient.
- (2) *Instructor guidance program.* Officers, non-commissioned officers, and other instructors will be given appropriate instructor training by cadre members throughout the entire training period. A school conducted by the

cadre will be organized as soon as the company is activated, preferably before the trainees arrive. Here the noncommissioned officers will be reviewed in their specialties and trained in methods of instruction. In the school the company commander will set up definite chains of responsibility for job supervision. The school will continue throughout the training period and gradually evolve into periodic meetings of the company commander, platoon leaders, and key noncommissioned officers.

c. Scope of training. Because of the variety of possible operational set-ups, training of the mobile laundry company must be thorough and complete. To prepare the laundry company for field duty, the entire training program must be covered.

- (1) *Field operations.* Field training should be conducted under conditions simulating as closely as possible actual conditions in the theater of operations. Battle conditions will be simulated and operations will be conducted day and night under a maximum load. The company should be given ample opportunities to improvise equipment to replace that destroyed by enemy action. Unit standing operating procedures for malaria control, destruction of equipment and supplies, decontamination, and defense against air, chemical, mechanized, and ground attack will be continually rehearsed. Thorough training should also be given in discipline, reorganization of the unit after attack, con-

struction of field fortifications, and movement of equipment and personnel.

- (2) *On-the-job training.* The laundry company can get valuable technical training by working at a post, camp, or station, supplementing fixed laundry facilities. If such an assignment is made, work should be done under the direction of company officers.

d. Points for particular emphasis. Experience in theaters of operations has proved that the following points must be stressed incessantly if the laundry company is to operate efficiently overseas:

- (1) *Bivouac selection and development.* The laundry company assigned to a communications zone or army service area may bivouac in the same location for several weeks or months. In such a situation, the value of improving the semipermanent camp site by good camp engineering cannot be overstressed. Camp engineering is one of the most important factors contributing to the comfort, morale, health, and efficiency of a service organization in the field. Proper selection of site, tent pitching, field installations (showers, wash racks, box latrines), and good field housekeeping should be included in the training.

- (2) *Field sanitation and personal hygiene.* Field sanitation and personal hygiene must be stressed continually. In tropical, semitropical, and frigid climates the health and comfort of the men depend upon how well they have been trained in these subjects. Bathing facilities are particularly important

in the Arctic because dirty skin does not function efficiently in controlling body heat. Clean clothes are necessary because dirt destroys the insulating qualities of clothing. Bivouac sanitation must also be rigidly enforced to prevent pollution of snow and ice that may be needed for drinking and cooking water. (See TM 1-240.)

- (3) *Security.* In areas subject to enemy observation and attack, proper security measures must be taken both in bivouac and on the job. The principles outlined in paragraph 50 must be thoroughly taught.
- (4) *Separate platoon and section operations.* Platoons and sections must be trained to operate as self-sustaining units.
- (5) *Interchangeability of personnel.* Every man in the company should know his own job and at least one other man's, for example, the supply clerk learns the supply sergeant's job and the section leader learns the platoon leader's job. By this method the company or the separate platoon or section can continue to operate effectively in spite of losses of personnel.
- (6) *Definite lines of responsibility.* The company commander should carefully build up definite lines of responsibility within the company and be sure that these lines are followed in job supervision. This is particularly necessary in maintenance operations. Strict adherence to the chain of command makes responsibility clear and dignifies the position of the noncommissioned officers.

Section II. UNIT TRAINING

10. ARMY TRAINING PROGRAMS. **a.** The mobile laundry company is trained under such programs as are announced from time to time by the Department of the Army, Army Area Commander, and/or other intermediate commanders. Currently, training direction is provided by the following programs:

- (1) ATP 21-1 provides the basic military training for the individual soldier. The program is designed to be used either to convert the recruit from a civilian to a soldier or to provide refresher military training for men who have been in the Army for some time.
- (2) MTP 10-1 provides training for the men in the military occupational specialties prescribed by the table of organization.
- (3) MTP 10-2 provides a guide for unit training.
- (4) MTP 10-3T is a program for advanced unit training. Training under this program must be ordered by proper authority.

b. For additional training requirements see appropriate Army Regulations, Special Regulations, or circulars.

11. CADRE. **a.** The cadre is a key group of enlisted men necessary to establish and train a new unit. An officer assigned to a newly activated laundry company must look to his cadremen for assistance in organizing and training his new company. Ideally, each of the cadre members will be thoroughly trained before joining the company and will be qualified both to perform his specific duties and to aid in training other members of the company. If any of the cadre members are

inefficient or not fully trained, the commander should pick out and train the most promising members of the personnel and put them in key positions.

b. Each member of the cadre should have the following qualifications:

- (1) Thorough training in basic military subjects.
- (2) Technical training and experience in his specialized task.
- (3) Ability to train men for specialized tasks.

CHAPTER 3

ORGANIZATION AND EQUIPMENT

Section I. ORGANIZATION

12. SECTION. The section is the smallest operating unit of the mobile laundry company. It is composed of 13 men, including the section leader and the assistant section leader. Four sections compose a platoon.

13. PLATOON. The platoon consists of a platoon headquarters and four operating sections. Four platoons compose a company.

14. COMPANY. a. Organization. The mobile laundry company is organized with the personnel and equipment authorized by T/O&E 10-167. It is composed of a company headquarters and four operating platoons. (See fig. 4.)

b. Company headquarters. The company headquarters consists of the company commander, normal administrative personnel, and a group of operating personnel, including supervisory, supply, and maintenance specialists. (See par. 25a and b.)

Section II. EQUIPMENT

15. SPECIALIZED ORGANIZATIONAL EQUIPMENT.

a. General. Each section of the laundry company is furnished a unit of the two-trailer type of laundry equipment. This equipment is mounted on two 2-wheeled trailers. Each trailer is 6½ feet wide by 14 feet long and weighs approximately 4,400 pounds

QUARTERMASTER LAUNDRY COMPANY (SEMI-MOBILE)

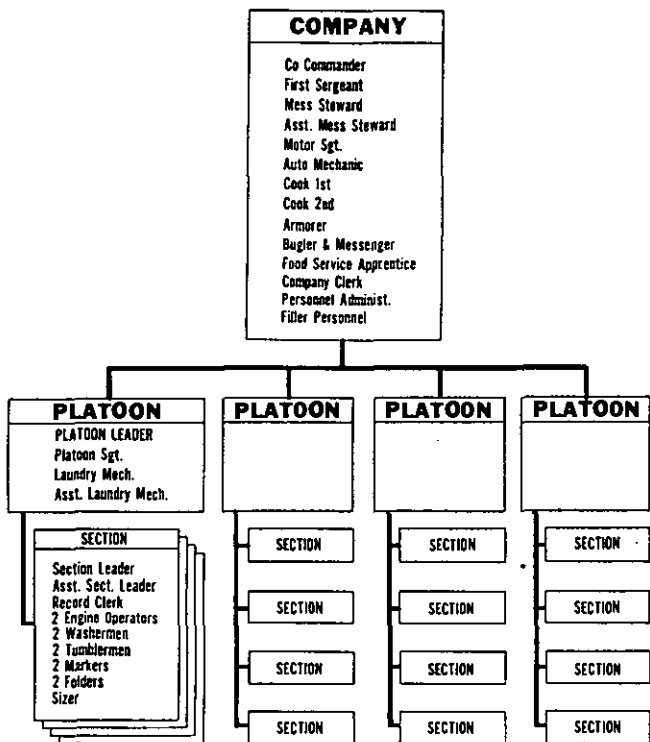


Figure 4. Organizational chart.

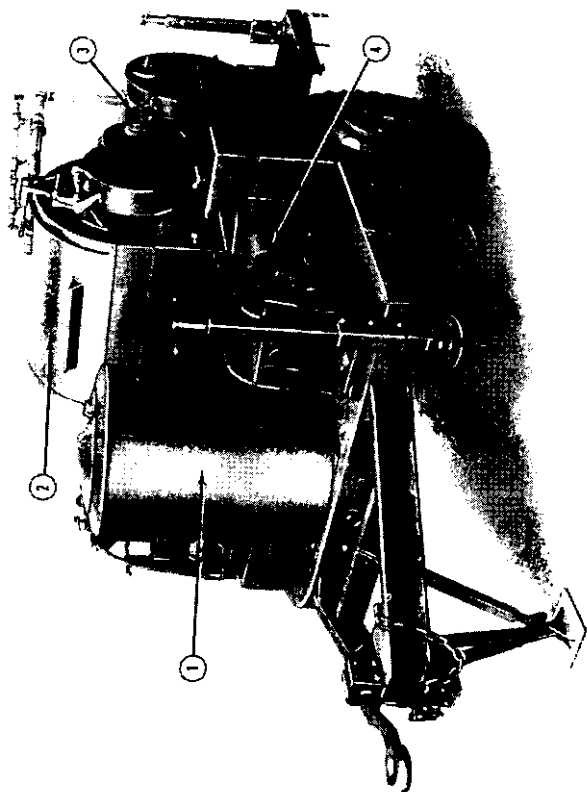
with the machinery mounted thereon. The trailer is towed by a 2½-ton 6 x 6 truck, which also carries personnel, organizational equipment, and supplies.

b. Washer trailer. The laundry equipment mounted on the washer trailer (see fig. 5) is as follows:

- (1) *Washer.* The washer is an all-metal 30- by 30-inch side-loading reversible cylinder type,

motor-driven by belt connection. It is equipped with a dial-type thermometer to indicate water temperature, a float-operated device to indicate water level, and a spring-wound cycle timer to time the operation. A sliding shell door has a supply lid to admit soap and chemicals to the washer while the cylinder is in motion. The dry-weight load capacity of the washer is 60 pounds.

- (2) *Extractor.* The extractor is of all-metal construction. The 20-inch steel basket, within the outer case, is motor-driven by belt connection and rotates at approximately 1,800 revolutions per minute. The extractor removes excess moisture from the wash load by centrifugal force, removing 70 percent of the moisture from approximately one-half a washerload of wet wash in 5 minutes.
- (3) *Water heater.* The heater is equipped with a fuel pressure-type gage, a dial-type thermometer, and a dial-type water pressure gage. It has a water storage capacity of 60 gallons. Its gasoline-fired burner operates automatically and can heat 500 gallons of water per hour from a temperature of 40° to a temperature of 180° F.
- (4) *Stationary drain tub.* The stationary drain tub is constructed of galvanized steel. It has a false perforated corrosion-resisting bottom and a drain connection.
- (5) *Portable pump.* The portable pump is an electric-motor-driven centrifugal-type pump weighing approximately 125 pounds. It is installed on a skid and carrying frame



① Extractor.

② Washer.

③ Water heater.

④ Portable pump.

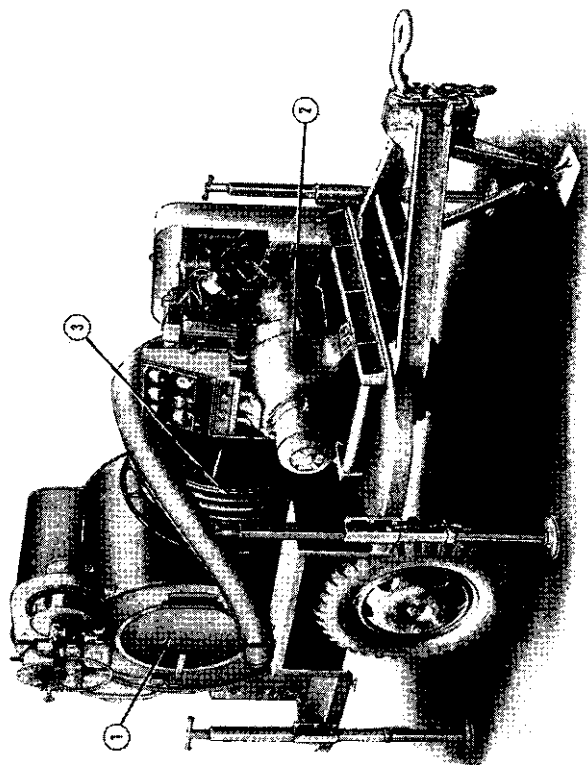
Figure 5. Washer trailer.

equipped with a control panel. Its portable feature permits it to be placed close to the water supply while the rest of the laundry is in a protected area. Hold-down clamps secure the pump to the trailer deck when the laundry unit is being moved.

c. Drying tumbler trailer. The laundry equipment mounted on the drying tumbler trailer (see fig. 6) is as follows:

- (1) *Drying tumbler.* The drying tumbler is an open-end, one-way, 36- by 30-inch tumbler with a load capacity of 40 pounds. A gasoline-fired heater unit fitted with a blower provides the volume of heated air necessary for the drying operation. The tumbler is also equipped with an air temperature control to regulate drying temperatures, a dial-type thermometer to indicate the air temperature within the tumbler cylinder, and a spring-wound timer to time the operating cycle.
- (2) *Engine-driven generator.* The gasoline-engine-driven 12.5 kilovolt-ampere generator supplies 230-volt, 60-cycle, 3-phase alternating current for the motors and lights of the trailer.
- (3) *Hose reel and hose.* The steel hose reel holds the 300 feet of 1½-inch three-ply pressure hose coupled in 50-foot sections, and 20 feet of 1½-inch suction hose coupled in 10-foot sections.

16. PROVISION OF EQUIPMENT. Each section is provided with the necessary laundry equipment for



① Drying tumbler.

② Engine-generator.

③ Hose reel and hose.

Figure 6. Drying tumbler trailer.

independent laundry operations. This equipment consists of one mobile laundry unit, two-trailer type (two trailers, one mounting the washer and extractor and the other mounting the drying tumbler); two tables for sorting laundry; four pin tray carriers with pins; and four canvas laundry baskets. This equipment is increased in multiples of four for the platoon and again for the company since there are four sections in a platoon and four platoons in a company.

Section III. MAINTENANCE

17. RESPONSIBILITY FOR MAINTENANCE. Each member of the mobile laundry company has a definite maintenance responsibility. It is the duty of each officer and each noncommissioned officer to see that instructions and procedures for maintenance operations, which are published in current technical manuals, Department of the Army lubrication orders, and other pertinent publications, are strictly complied with by all personnel under his control. Each officer and each noncommissioned officer is responsible for insuring that authorized lubricants, parts, tools, and supplies are made available at all times for proper performance of maintenance operations.

18. PREVENTIVE MAINTENANCE. a. The purpose of preventive maintenance is to detect and correct minor or incipient troubles before they develop into major troubles. Preventive maintenance consists of the following:

- (1) Daily and weekly maintenance service performed by all operators. (See TM 10-1680.)
- (2) Weekly, monthly, quarterly, and semi-annually maintenance service performed by

organizational mechanics under the direction of the headquarters maintenance personnel.

b. It is the duty of the company commander and the platoon leaders to see that each man within their command is trained in proper preventive maintenance of all equipment and that sufficient time is allotted for proper application.

19. MAINTENANCE OF LAUNDRY EQUIPMENT. a.

Operator maintenance. The chief responsibility for preventive maintenance lies with the operator. Only through reports initiated by him can the mechanic know what difficulties a piece of equipment is causing. As a matter of regular routine each operator is required to perform the daily services prescribed in the technical manual accompanying the equipment. Faithful performance of these services will do much to prolong the life of the equipment and to avoid major repairs and overhauls by the company mechanics. In multishift operations responsibility for operator maintenance must be clearly defined and supervised.

b. Organizational maintenance. The prescribed maintenance of laundry equipment (see TM 10-1680) is performed by the laundry mechanics of the company. Sufficient tools and spare parts are allotted to do the work prescribed.

c. Field and depot maintenance. Field and depot maintenance is prescribed in TM 10-1680. Field maintenance will be performed by the Quartermaster Reclamation and Maintenance Company T/O&E 10-237. Depot maintenance will be performed by quartermaster depot reclamation installations.

20. MAINTENANCE OF INDIVIDUAL AND ORGANIZATION EQUIPMENT.

a. Vehicles. The vehicles assigned to the laundry company will be maintained by the drivers and the company automobile mechanics, who will follow procedures prescribed in TM 37-2810 and the proper vehicle technical manuals.

b. Clothing and equipment. Clothing and equipment will be maintained as prescribed in AR 615-40 and appropriate Department of the Army publications. Regular inspections by officers and noncommissioned officers will insure that the regulations are being followed.

c. Other organizational equipment. Other organizational equipment will be maintained by the user and the company mechanics as prescribed by TM 38-650, appropriate technical manuals, and related publications.

21. MAINTENANCE RECORDS.

a. Vehicles. See TM 37-2810 for prescribed maintenance records.

b. Laundry equipment. There are no prescribed forms for maintenance records for laundry equipment. However, improvised records should be kept to insure that scheduled maintenance services are performed regularly. Either WD AGO Form 460, as shown in TM 37-2810, or a similar improvised form may be used to record weekly, monthly, and semiannual preventive maintenance services. Special reports may be required by higher authorities, depending upon the local situation.

22. SUPPLY OF SPARE PARTS AND TOOLS.

a. Authorized allowances of spare parts and tools for

the laundry company will be supplied upon activation of the company. Company supply personnel will maintain the authorized stock level by requisition from or exchange with a quartermaster spare parts unit.

b. The effectiveness of spare parts supply is dependent largely upon careful study of needs by maintenance personnel and upon clear and accurate requisitions to the supply agency. When appropriate, all spare parts requisitions should indicate the make, model, and serial or series number of the equipment, as well as the official stock number and nomenclature of all items required. The latest Department of the Army supply catalog or standard nomenclature list should be used to obtain spare parts numbers and nomenclature. Enter on the face of each requisition a reference to the source of information. When technical manuals are used to obtain spare parts numbers and nomenclature, the title and date of such publications should be stated on the face of the requisition to aid the supply agency in determining the exact spare parts desired.

CHAPTER 4

DUTIES OF PERSONNEL

Section 1. GENERAL DESCRIPTION

23. SECTION. The section, which is the smallest operating unit, is not allotted sufficient housekeeping personnel to operate separately; therefore, when it is required to operate separately, it should be attached to another organization for messing and administrative control.

a. Section leaders and assistant section leaders. The section leaders and assistant section leaders are laundry foremen capable of directing the laundry operations of the section. Normally, a section leader heads one operating shift and the assistant section leader heads the other shift. They are responsible for the processing of the work and the proper operator maintenance of the laundry equipment under their direction.

b. Record clerk. The record clerk keeps the operational and supply records for the individual section.

c. Engine operators. The engine operators operate and maintain the gasoline engines that drive the generators. They perform the required maintenance inspections and assist the mechanics in performing organizational maintenance on the generators. In carrying out their mission, they follow the instructions

given in TM 10-1680. They are also qualified to operate the laundry machinery mounted on the trailers.

d. Washmen and tumblermen. The washmen and tumblermen operate the laundry machinery installed on the trailers. Normally, one man operates the washer and extractor, and a second man operates the tumbler, but each man should understand and be able to operate all three of the laundry units. The washmen and tumblermen must have a thorough knowledge of the relative fastness of dyes and colors, proper water temperatures, and washing formulas.

e. Markers, folders, and resizers. The markers, folders, and resizers process the work before and after the washing operation. The markers receive the work, identify all articles in individual bundle work, classify it into washerloads, and pass it on to the laundry machine operators. After the work is laundered, it is passed to the folders and resizers, who reassemble the bundles, prepare the work for repair, or resize and fold the items, according to the type of laundry work being done. (See par. 34a, and b.)

24. PLATOON HEADQUARTERS. a. Platoon leaders. The platoon leaders are responsible for the training of the troops in both technical and tactical phases of platoon operation. Following the general instructions and training schedules of the company commander, the platoon leaders should train their platoons with a dual purpose in mind. First, they are responsible to the company commander for the development of the platoon as a part of the company team. Second, they must make the unit selfreliant, since the platoon may often be detached from the company to operate as a separate unit. In such a situation the platoon

leader will be responsible for the administration, transportation, supply, and security of the unit.

(1) *Company duties.* Officers assigned as platoon leaders are available for additional duties which may be assigned by the company commander. Such duties include assignments as mess officer, supply officer, gas officer, security officer, company censor, and any other assignments that the situation demands. In delegating this authority to platoon leaders, the company commander retains responsibility for the proper performance of these duties.

(2) *Specialized requirements and duties.* The platoon leaders must have the ability to supervise the operation of a laundry. They must have a thorough knowledge of laundry procedure and washing formulas. They are responsible for the maintenance of the mobile laundry equipment and machinery and for keeping on hand adequate stocks of laundry supplies and spare parts. It is also their responsibility to see that maximum efficiency is attained by the laundry units.

b. Platoon sergeant. The platoon sergeant, who is a qualified laundry foreman, is the noncommissioned assistant to the platoon leader. Through the section leaders under him he supervises the laundry operations of the platoon and the security measures taken to protect the unit. Assisted by the laundry mechanics, engine operators, and the company supply sergeant, he coordinates the operation, maintenance, and supply of the mobile laundry company. He also drives the vehicle to which he is assigned. When the platoon

is operating independently, the platoon sergeant must assume the duties of first sergeant for the platoon in addition to his normal duties.

c. Laundry mechanics. The laundry mechanic and the assistant laundry mechanic adjust, service, and repair the laundry equipment used in the mobile laundry company. They work under the direction of the laundry foreman in providing organizational maintenance. They also drive the vehicles to which they are assigned.

25. COMPANY HEADQUARTERS. a. Company commander. The company commander is both the administrator of the company and the director of its operations. He is responsible for the following:

- (1) *Administration.* The company commander directs and is responsible for the administration of the laundry company as prescribed by AR 245-5 and TM 12-250. To this end he delegates many of the routine responsibilities, particularly the paper work, to his junior officers and noncommissioned officers. He is also responsible for maintaining adequate liaison with higher headquarters and with units served in order to secure maximum utilization of the company's facilities.
- (2) *Technical supervision.* The company commander is responsible for the efficient operation of the laundry company and for the care and preservation of equipment and supplies.
- (3) *Personnel training.* The company commander should devote his major attention to the training and discipline of personnel

and should strive constantly to increase the efficiency and speed of operation. Anticipating needs for the replacement of keymen, he should insure that an understudy is trained for each of the cadre members.

- (4) *Security.* The company commander is responsible that his men are instructed in the use of weapons and camouflage. He should formulate tactical plans for emergency evacuations and train his men in the execution of these plans. He should also instruct them in demolition methods to be employed if enemy action forces them to abandon property.
- (5) *Morale.* The company commander should strive to provide for his men all the comforts and privileges consistent with discipline. While quick to censure slovenly performed work, he should be equally quick to commend diligence and initiative. He should show by his actions that he is personally concerned with the welfare of his troops. The successful commander will take steps to see that his men are properly fed, clothed, and sheltered and that opportunities are afforded them for recreational activities.

b. Enlisted personnel in company headquarters.

- (1) The first sergeant, the company supply sergeant, and the company clerk perform the necessary administrative and supply functions in the laundry company. Their duties are discussed in TM 12-250.
- (2) The mess steward, the cooks, and the food service apprentices operate the company

mess under the direction of the mess officer. When platoons are operating separately, these men may be apportioned to the separate platoons to provide mess facilities. Their duties are discussed in TM 10-205 and TM 10-405. Each food service apprentice drives the vehicle to which he is assigned.

- (3) The personnel administrative technician prepares reports, correspondence, records, and forms on personnel matters.
- (4) The bugler drives one of the trucks assigned to company headquarters, performs additional duties as clerk, messenger, and orderly, and, if required, sounds the regulation calls and commands as prescribed in TM 20-250.
- (5) The motor sergeant and automobile mechanics perform organizational maintenance upon the company vehicles as prescribed in TM 37-2810 and in the appropriate vehicle technical manuals.
- (6) The armorer maintains the company weapons and drives the vehicle to which he is assigned, performing operator's maintenance as prescribed in the appropriate vehicle technical manuals.
- (7) The laundry superintendent is the noncommissioned operations assistant to the company commander. He is the direct supervisor of all laundry operations, assisting the company commander in their coordination and control. He works closely with the laundry foreman (see par. 23a), directing

their work and helping them to solve their problems. He should be an experienced laundryman, capable of instructing laundry machine operators, enginemen, markers, folders, resizers, and maintenance men in the essentials of their duties.

- (8) The company supply sergeant is responsible for all normal unit administrative supply and, in addition, for the maintenance of the proper level of operating supplies and spare parts prescribed by higher authority. He must anticipate items for future needs and requisition and receive, store, and issue these items. He is also responsible for transporting them when the company changes location. He must work closely with the platoon sergeants in each of the platoons (see par. 24b), learning their needs and furnishing them with supplies and spare parts as required. He should maintain a running inventory of supplies and be able to furnish information for the preparation of operation reports as required. He is assisted by a supply assistant.

Section II. SETTING UP AND TAKING DOWN EQUIPMENT

26. SETTING-UP OPERATIONS. Since each section is a complete operating unit, the setting-up will be done by sections. Each man in the section will be assigned a number and given certain duties to perform. The section leader and the assistant section leader will supervise the setting-up operations. The follow-

ing procedure will be used in setting up the mobile laundry:

a. Numbers will be assigned to section personnel as follows:

- (1) Nos. 1 and 2 will be engine operators.
- (2) Nos. 3 and 4 will be tumblermen.
- (3) Nos. 5 and 6 will be washmen.
- (4) Nos. 7 and 8 will be folders and resizers.
- (5) Nos. 9 and 10 will be markers.
- (6) No. 11 will be record clerk.

b. Setting-up operations will be performed in the following manner:

- (1) Nos. 1 and 2 will release trailer latch on washer trailer, uncouple trailer from towing vehicle, and remove tarpaulins.
- (2) Nos. 1, 2, 3, 4, 5, and 6 will move trailer into operating position.
- (3) Nos. 2 and 3 will lower and secure auxiliary support.
- (4) Nos. 3, 4, 5, and 6 will level trailer by lowering corner standjacks (one man on each standjack) and adjusting them by means of screw mechanism.
- (5) Nos. 1 and 2 will check trailer level by means of bubble gages located at diagonal corners of trailer deck.
- (6) Nos. 1, 2, 3, 4, 5, and 6 will repeat above operations to position and level drying tumbler trailer.
- (7) Nos. 5 and 6 will remove portable pump from washer trailer and place it as close to water source as terrain allows.
- (8) No. 1 will check oil and water level in engine-generator set.

- (9) No. 2 will check gasoline level in fuel tanks on both trailers.
- (10) Nos. 5 and 6 will connect suction hose and intake strainer to portable pump and connect pressure hose and electrical cables.
- (11) Nos. 1 and 2 will connect flexible canvas exhaust duct to drying tumbler and connect flexible metal exhaust duct to water heater. (When operating in dry woods, nozzle of metal duct should be turned up to avoid fire hazard. When operating in building or tent, all exhaust ducts must lead outside the enclosure to avoid the danger of exhaust gases.)
- (12) No. 3 will clean washer, extractor, and drain basket and remove basket stabilizer from extractor.
- (13) No. 4 will clean inside of tumbler.
- (14) No. 1 will start engine-generator set and fire tumbler burner.
- (15) Nos. 2, 3, and 4 will assist Nos. 5 and 6 in attaching and laying out hose sections.
- (16) No. 1 will assist in laying out hose sections as soon as engine and tumbler are fired.
- (17) Nos. 5 and 6 will start portable pump.
- (18) Nos. 3 and 4 will carry operating supplies from supply tent to washer trailer.
- (19) No. 2 will fire water heater as soon as water in heater reaches proper level.
- (20) Nos. 1 and 3 will stand by to check operation of equipment.
- (21) Nos. 2, 4, 5, and 6 will assist in pitching tents.

c. Meanwhile, as soon as the two trailers are uncoupled, the trucks will be driven to the chosen tent area. Nos. 7, 8, 9, 10, and 11 will pitch the two tents. FM 20-15 gives detailed instructions for tent pitching.

27. TAKING-DOWN OPERATIONS. Taking-down operations will be performed as follows:

a. No. 7 will return operating supplies to supply tent.

b. Nos. 8 and 9 will load equipment from supply tent on towing vehicle.

c. Nos. 10 and 11 will load equipment from marking and sorting tent on towing vehicle.

d. Nos. 7, 8, 9, 10, and 11 will strike tents.

e. No. 5 will remove pump intake strainer from water, allow pump to run a few minutes to clear hoses, then turn off portable pump.

f. No. 2 will turn off water heater burner.

g. Nos. 3 and 4 will turn off tumbler and extractor, wipe out inside of both, and replace basket stabilizer in extractor.

h. No. 6 will drain water from washer, turn off washer, and wipe out inside.

i. No. 1 will turn off gasoline engine.

j. Nos. 1 and 2 will disconnect flexible metal exhaust duct from water heater and disconnect canvas exhaust duct from drying tumbler.

k. Nos. 4, 5, and 6 will disconnect hose sections and coil on hose reel.

l. Nos. 2 and 3 will disconnect electrical cables from power source.

m. Nos. 5 and 6 will carry portable pump to washer trailer and clamp to trailer deck.

n. Nos. 1, 2, 3, and 4 will retract standjacks on both trailers.

o. Nos. 1 and 2 will retract auxiliary support on washer trailer and couple trailer to towing vehicle.

p. Nos. 3 and 4 will retract auxiliary support on drying tumbler trailer and couple trailer to towing vehicle.

q. Nos. 7, 8, 9, 10, and 11 will load tents, tent poles, and pins on trucks.

r. Nos. 1 and 2 will place tarpaulins over trailers and secure them by means of ropes provided.

s. Entire section will police area.

CHAPTER 5

PREPARATION FOR OPERATIONS

Section I. RECONNAISSANCE AND SITE SELECTION

28. RECONNAISSANCE. When reconnoitering for an operating site for the mobile laundry, the following factors must be considered:

a. Water. The laundry must be located near a plentiful supply of clean water, since about 200 gallons of water an hour will be required for each laundry unit. Obviously, the ideal water source would be a clear full stream or lake, but even a thin shallow stream may be used by building a dam to form a suitable water reservoir or by digging a hole in the stream bed to form a pool in which to place the intake strainer. It has been found that wells generally are unreliable unless fed by underground streams. In some operations, sufficient fresh water is not available for laundering purposes. Consequently, the mobile laundry must be operated with brackish or sea water. Sea water should be used only in an emergency because it accelerates mechanical deterioration to about four times the normal rate. If the laundry is operating in a town where there is a local water system, the intake hose may be connected with the local supply.

b. Terrain. The laundry site should be located on firm, level, well-drained ground that will support the

laundry trailers and company vehicles in any weather. The site must also be accessible to a traveled route or road net and must be large enough for a turn-around, where incoming vehicles can pass in front of the marking and sorting tent and out to the route of departure. The site chosen must be situated so that waste water may be drained away without contaminating the water at the intake point.

c. Weather. In cold weather the laundry should be located in a sheltered area where natural protection is provided against both wind and cold. In hot weather the location should allow for as much air circulation as possible. In rainy weather a location that might be flooded by rising water must be avoided.

d. Camouflage. Whenever possible, the operating site should provide natural concealment. Sites under large trees and in screen coves are particularly desirable. Camouflage by natural foliage, drapes, and flattops will be used.

29. SITE SELECTION. **a.** The selection of a site should be coordinated with the engineer officer of the command. Normally, no laundry units should be located near water points. If it is necessary to use the same stream for water points and laundry, the laundry unit should be located down-stream from the water point. No laundry should be located on a lake that is being used as a water point. The same is true for small and slow flowing streams.

b. After reconnaissance has been made, if the terrain and tactical situation allow a choice, an operating site which must nearly conform to the following requisite conditions should be chosen:

- (1) Firm, level ground within 200 feet of water

supply (300 feet of hose is the maximum provided for both intake and outlet). Each two-trailer laundry unit will require a space approximately 15 by 18 feet.

- (2) Discharge point for dirty water that will not contaminate water used for drinking, cooking, or bathing.
- (3) Accessibility to good road net.
- (4) Sufficient room for vehicle turn-around.
- (5) Sufficient space for disposition.
- (6) Concealed area for bivouac and vehicle parking.
- (7) Protected slope or trees as windbreaks.
- (8) Concealment from air observation.
- (9) Topography suitable for the establishment of an intracamp road net.

Section II. PLANNING FOR OPERATIONS

30. LAY-OUT. The size and shape of the available area, the terrain, and the position of related units will dictate the plan to be followed in laying out the operating section or operating platoon of the laundry company. (See figs. 7 and 8.) However, the following factors always must be considered in the mobile laundry lay-out plan:

- a. Space for vehicle turn-around.
- b. Traffic control point.
- c. Provision for one-way traffic circulation.
- d. Space for a marking and sorting tent and a control and supply tent as close to the laundry trailers as is tactically feasible.
- e. When the laundry unit is working with another unit, the laundry unit should be set up as close to the

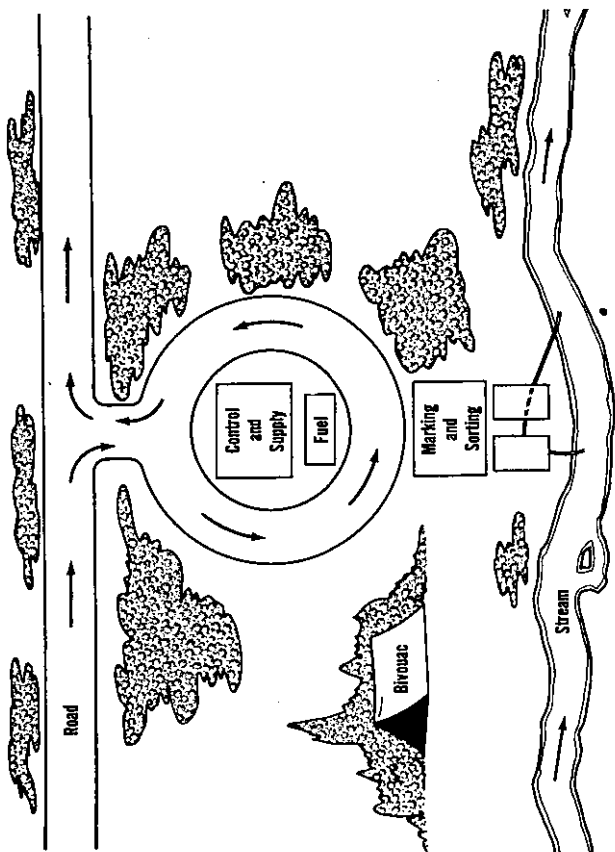


Figure 7. Suggested lay-out of laundry section.

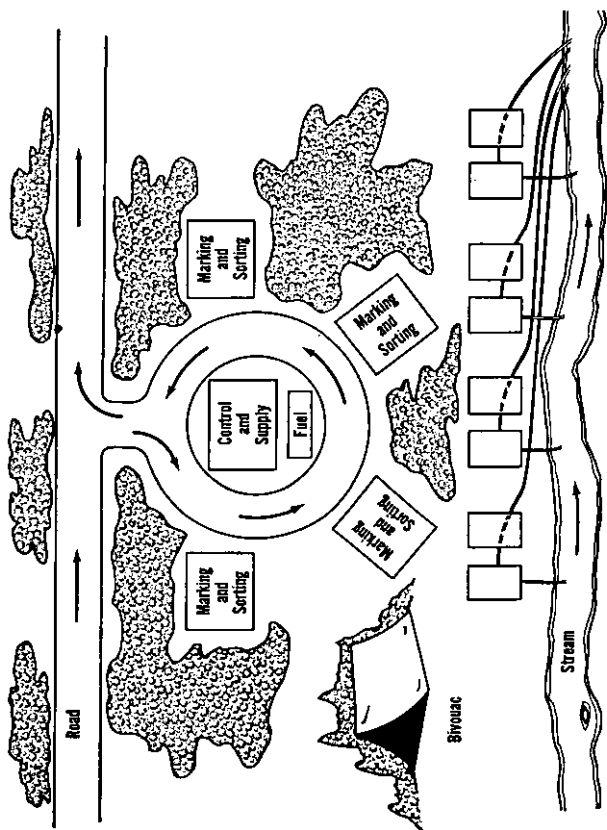


Figure 8. Suggested lay-out of laundry platoon.

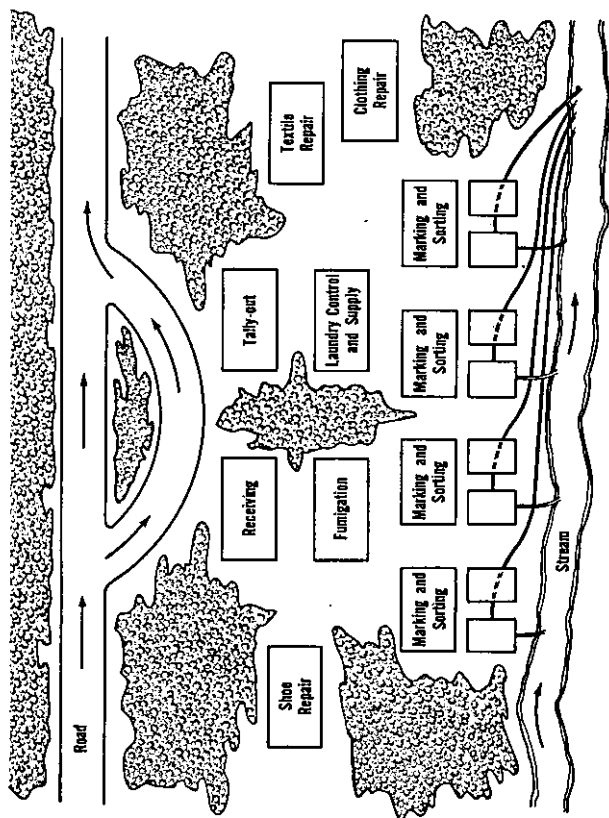


Figure 9. Suggested lay-out of laundry when operating with reclamation and maintenance company.

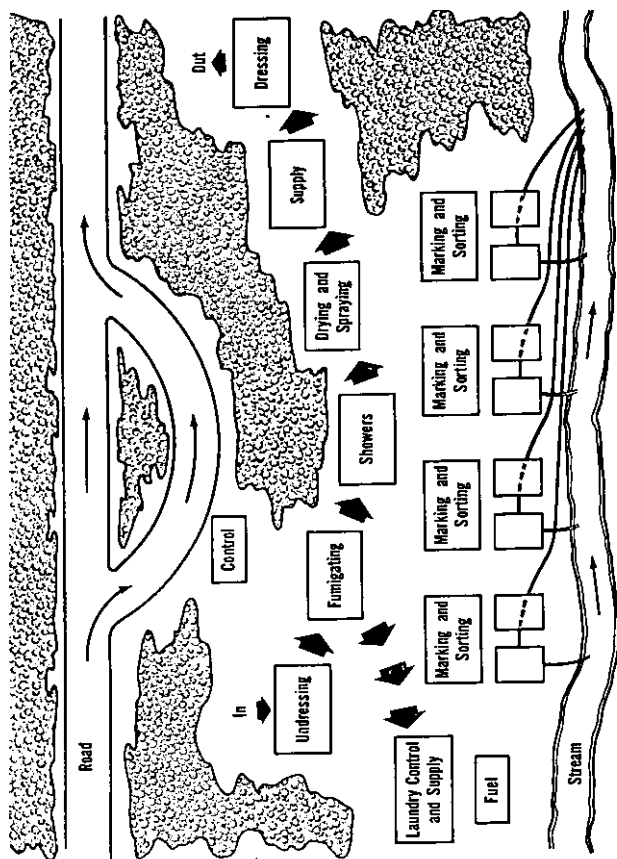


Figure 10. Suggested lay-out of laundry when operating with a clothing exchange and bath activity.

other unit as possible to facilitate operations. (See figs. 9 and 10.)

31. TECHNICAL OPERATIONS. a. As separate unit.

When the mobile laundry is operating as a separate unit, the work usually will be done on an individual bundle basis. (See pars. 34a and 36a.) Field units not actively engaged in combat that are authorized individual service will deliver the soiled laundry work to the installation in accordance with a schedule arranged by the laundry officer. The mobile laundry does not pick up or deliver laundry work. The incoming truck will enter the one-way turn-around and stop at the control station, where the driver will leave the bags of soiled clothes and receive a slip bearing the date and time when he must pick up the laundered work. The soiled laundry is taken in canvas baskets to the marking and sorting tents where it is identified by the pin system (see par. 34a) and sorted according to color and type of fabric. Now it is ready for the washing process. The soiled laundry work is carried to the washer trailer in canvas laundry baskets, each basket holding a full washerload. After it is washed, the clean laundry work is placed in the extractor, which removes most of the moisture. It is then transferred to the drying tumbler on the drying tumbler trailer. When the laundry work is dry, it is loaded once more into the canvas laundry baskets and carried back to the marking and sorting tent. There it is reassembled into individual bundles. The laundering process is completed. The clean laundry work is ready to be picked up.

b. With clothing exchange and bath unit. When the mobile laundry is operating in conjunction with a

clothing exchange and bath unit, the work will be done on a bulk basis. (See par. 34b.) The laundry receives the dirty clothing, classifies it by color and type of fabric, washes it, and resizes all garments as small, medium, or large. After resizing, the garments are packed in barracks bags and returned to the bath unit for re-issue. All garments which, after washing, are still unfit for re-issue are segregated and sent to a reclamation and maintenance unit.

c. With reclamation installation. When the mobile laundry operates as part of a reclamation installation, the work will be done on a bulk basis. The articles to be reclaimed are fumigated, laundered, repaired, and returned to supply channels for re-issue.

d. As part of Medical Corps installations. When the mobile laundry operates as part of a Medical Corps installation, the articles laundered will include sheets, towels, operating gowns, hospital clothing, and other similar work which is handled in bulk.

CHAPTER 6

OPERATION OF THE UNIT

Section I. METHODS OF OPERATING

32. SETTING UP LAUNDRY UNIT. **a. Duties of personnel.** The duties of each person involved in setting up the equipment for the laundry unit are described in detail in paragraph 26.

b. Positioning trailers. The two trailers composing the two-trailer type of mobile laundry must be positioned with drawbars in the same direction. The relative position of the two trailers may be either of the following:

- (1) Trailers parallel but echeloned so that the tumbler on the drying tumbler trailer is directly opposite the washer.
- (2) Trailers parallel and approximately 3 feet apart with drawbars alined.

c. Preparing for operations. When the trailers are in position, they are leveled by using the corner stand-jacks. The trailer level is checked by using the bubble levels located at diagonal corners of each trailer deck. Once the trailers are positioned and leveled, the hose sections and power lines are connected. The portable pump is placed as close to the water supply as terrain permits. The intake hose is laid out to the portable pump along as straight a line as possible.

The intake strainer is attached to the suction hose on the portable pump and placed in the water. The intake strainer must either rest on a rock or be semi-floated to prevent its being clogged with leaves, trash, and other foreign matter. The discharge hose is connected to the trailer and run out to the water disposal point. The trailer is now ready to begin operations, as described in TM 10-1680.

d. Pitching tents. While the mobile laundry units are being placed in position, a crew composed of the markers, folders, resizers, and laborers pitches the tents (two squad tents are supplied to each section) as close to the trailers as possible without violating principles of camouflage or restricting the movement. (See FM 20-15.) Once the tents are pitched, the folding laundry tables, pin trays, laundry baskets, and other items of equipment are arranged in the marking and sorting tents so that the unit can begin operations.

33. LAUNDRY SUPPLIES. In field laundry operations, only those supplies necessary for rapid, clean, and sanitary washing are used. Normally, only the following supplies are used:

a. Water. The laundry uses more water than any other single material. The supply must be adequate and as free from impurities as possible. Hardness in water caused by mineral content reduces the detergent action of the soap, and the minerals form sticky lime and magnesium deposits which are difficult to rinse from the fabric. The chosen water source should, therefore, contain the cleanest and softest water available.

b. Soap. The mobile laundry is supplied with a synthetic soap (see SR 725-200-1), which is a good

dirt remover in either hard or soft water, is effective in either acid or alkaline solutions, and is efficient at either high or low temperatures. It is made from a base of sulfonated alcohol plus about 35 percent dry solvents (such as carbon disulfide and carbon tetrachloride). About 3 ounces of suds for each 60-pound washerload normally is required, but the amount will vary with the condition of the work. Since this synthetic soap is so concentrated and so little affected by laundering conditions, it has proved an excellent substitute for the conventional soap and alkali.

c. Sour. Laundry sour (see SR 725-200-1) is a finely powdered mixture of sodium silicofluoride and sodium acid fluoride, with 1 percent antichlor compound. Three ounces of the sour normally are used in the last rinse to neutralize and precipitate any alkaline residue that may have collected on the clothing during the washing operation. The sour tends to kill bacteria and washing odors, giving clothes the sweet odor that is present in sun-dried clothes.

d. Soda ash. Soda ash is a moderately strong alkali that is sometimes added to the first suds ($1\frac{1}{2}$ to 3 ounces per 60-pound washerload). It should be used only when the clothes to be laundered are extremely dirty. It aids in washing out grease and heavy dirt but is destructive to both color and fabric and is extremely difficult to rinse.

34. KINDS OF LAUNDRY WORK. **a. Individual bundle work.** Individual bundle service corresponds to commercial practice in that each person's clothing is returned to him after being washed and dried. This type of service may be given when the mobile laundry unit is attached to a corps, an army, or small task

force. When individual bundle work is done, the pin system of identification is used to make certain that each man will get back his own clothes. Each platoon of the laundry is supplied with 16 pin trays. Each tray contains 24 posts with 24 pins on each post. Each tray is given a letter and each post is given a number from 1 to 24. Each pin is marked with both tray letter and post number; for example, D6. (See par 36.)

b. Bulk work. If the laundry company is attached to a hospital, clothing exchange and bath unit, or reclamation installation, it will normally do only bulk work. Bulk work consists of material which is to be laundered and placed in stock or repaired rather than to be returned to an individual. At a hospital such laundry work consists of such articles as bed linens and operating gowns. At a clothing exchange and bath unit the work consists of clothing turned in by men who receive clean clothes after their bath. At a reclamation and maintenance installation the work consists of clothing turned in to the organization for repair. In any case, the soiled clothing is prepared for the laundry trailers by classifying it according to color and type of fabric. The sorting and resizing after washing are discussed in paragraph 36d and e.

35. LAUNDERING OPERATIONS. a. Washing.

Washing is primarily a cleaning process in which water is used as a solvent and soap and alkali as detergents. The purpose of the detergent is to lower the surface tension of the water so that it penetrates the fabric and dissolves the dirt. As the liquid passes through the fabric, the dirt is held in suspension and emulsified so that it floats clear of the fabric. The revolutions

of the washer cylinder force the water through the fabric by means of a squeezing, pounding action that speeds the detergent action. The washing process is made up of three operations.

- (1) *Sudsing*. Sudsing operations are those in which the synthetic soap is added to the water in the washer. They are the detergent operations which loosen the dirt from the fabric. The amount of suds depends upon the formula used.
- (2) *Rinsing*. Rinsing operations are those in which clear hot water is used to wash out the loosened dirt and the lime and magnesium deposits caused by the action of the detergent and the minerals in the water and the dirt.
- (3) *Souring*. Souring operations are a part of the last rinse. Sour is added to the rinsing water to neutralize the last traces of alkali from the sudsing operations and to destroy washing odors.

b. Formulas. The mobile laundry normally follows a 19-minute washing formula composed of two sudsing and three rinsing operations, with sour added to the last rinse. The various washing formulas are listed in appendix III.

36. LAUNDRY PROCEDURE. a. Marking and sorting.

- (1) *Individual bundle work*. When individual bundle work is received, the following procedure is observed, the pin system of identification being used:
 - (a) The bundle is emptied onto the table and the enclosed laundry list found. (See app. IV.) In the upper right-hand corner of

the laundry list are written the letter and number of the pin lot assigned this bundle. Not more than one pin tray should be on the table at a time.

- (b) The clothes in the bundle are counted and checked against the laundry list. If the count is short or long, the quantity written on the list is circled and the correct number put beside it. If the count is correct, a check is put by each number on the list to acknowledge receipt. The marker checking the list initials it.
- (c) The laundry list is pinned to the barracks bag in which the soiled clothes came, a marking pin from the post assigned being used, and the bag is hung on the table. (The marking and sorting table holds 24 bags, hung from nails driven into the edge of the table top. The marking pins from one pin post will be required for each bag of clothes. Thus one 24-post pin tray will be sufficient to mark one full tableload of clothes.)
- (d) Each garment is pinned, the marking pin being woven into the fabric so that it will not tear out. Each garment is pinned in the place designated by the following table:

Garment	Place for pin
Caps.....	Curtain (sweatband).
Fatigue and field jackets; shirts.	Front near bottom (button side).
Handkerchiefs and towels.	As near corner as possible (several together).

Garment	Place for pin
Socks.....	Top (several together).
Ties.....	Center (at half of length).
Trousers, coveralls, and drawers.	Fly (button side).
Undershirts.....	Bottom at rear.

(e) After a garment is pinned, it is thrown into the proper basket. In the field two laundry baskets are used at each marking and sorting table, one for white work and one for colored work. Khakis are put in with white work because they are fast-colored. Woolen field clothing is put in with colored work. Each basket, when full, holds one washerload.

(2) *Bulk work.* Bulk material, which is to be laundered and placed in stock, is not marked. It is segregated into two main classifications, wool and cotton, and further segregated into white and colored.

b. Washing. The soiled laundry work is carried to the washer trailer. Normally, the washing is done on a 19-minute operating schedule. The washer is operated as prescribed in TM 10-1680. For the various formulas used and the time involved, see appendix-III.

c. Drying.

(1) *Extractor.* The washed clothes are lifted from the washer into the extractor, which holds approximately half of the washerload. The remaining half is placed in the drain box between the washer and the extractor. An

extractor run of 5 minutes will remove about 70 percent of the water from the clothes.

- (2) *Drying tumbler.* After the extractor run, the clothes are placed in the tumbler, which is designed to hold one extractor load. A tumbler run of from 8 to 9 minutes will dry the clothes. When the clothes are dry, they are placed in the laundry baskets and returned to the marking and sorting tent.

d. Sorting and reassembling. When the clean clothes are brought into the marking and sorting tent, the following procedure is observed:

- (1) The letter of the marking pin lot is written with chalk in the center of the table. The pin number that corresponds to the pin attached to each bag is written with chalk on the top of the table, in front of each hanging bag.
- (2) Each garment is checked for its marking pin and put into the proper bag. The matching bag is found by checking the chalked numbers on the table.
- (3) When all of the clothes are in the proper bag, the bags are emptied one at a time onto the table, the clothes being still pinned. Each garment is checked against the laundry list, the pin being taken out as the check is made. Care should be taken that the pins on the clothes match the marking pin on the bag. This gives a double check. The bundles are ready to be picked up.
- (4) Any bundles that are short, are held up. Any extra garments, those unpinned or those with pins torn out, are placed in the "lucky bag."

Any available container may be used as a lucky bag. The short bundles are made up by replacing lost garments with leftovers from the lucky bag.

e. Resizing. Resizing consists in measuring clothes after they have been laundered and marking the items in accordance with the instructions given in current Department of the Army publications. Resizing will be necessary only when bulk work is being done.

37. LAUNDERING PERMEABLE PROTECTIVE CLOTHING.

a. When impregnite is to be protected. Permeable protective clothing may be laundered with a minimum of damage to the impregnite by using the formula usually used for woolens. (See appendix III.) Mild soap should be used and the temperature of the wash water must be maintained at 90° F. because higher temperatures will destroy the impregnite. No sour should be put in the last rinse, because acid solutions attack the active ingredient in the clothing. When the woolens formula is used, permeable protective clothing may be laundered about four times before it is necessary to reimpregnate it. Normally, after being laundered, protective clothing is turned over to a chemical processing unit which will inspect and, when necessary, reimpregnate it.

b. When impregnite is to be removed. If it should become necessary to remove the impregnite from protective clothing, the formula given in appendix III will be used.

38. DECONTAMINATING CLOTHING. Clothing contaminated by liquid chemical agents will be received

by laundry units in gas-resistant sacks or other airtight containers. Operators dressed in impermeable clothing and gas masks will open the bags and remove the contaminated clothing as soon as possible after receipt because the clothing will deteriorate rapidly if kept in an airtight container.

a. Cottons and linens are usually decontaminated when washed by formula 5 given in appendix III.

b. The fabric of woolen or part-woolen clothes that have been contaminated with a chemical agent will be damaged extensively by machine washing and is best decontaminated by the methods prescribed in TM 3-220. If it is necessary to decontaminate by washing these clothes in mobile laundries, the formula used for cottons and linens, may be used, but the washer must be stopped during draining and refilling to prevent as much damage to the fabric as possible.

c. All clothing, either cotton or woolen, which after washing is still contaminated should be laundered again, using the cotton and linen formula. If the chemical agent is still present after the second processing, the items should be discarded and either burned or buried.

39. OPERATING UNDER UNUSUAL CONDITIONS. a.

In extreme cold. The two-trailer type of laundry unit is not designed for operation in freezing temperatures. When the outside temperature is below 32° F., operations will be performed inside a heated building or enclosure. When the laundry unit is set up inside, all exhaust tubes and ducts must lead to the outside of the enclosure to eliminate gas fumes and heat. The exhaust ends should be placed to the leeward when possible. When the unit is not in operation, even for

a short time, certain precautions must be taken. The unit must be drained completely—all plugs removed, all water valves opened, and all hoses drained. If it should become necessary to produce water for laundering operations by melting ice or snow, ice is preferable to snow because it is compact. When ice is melted, it retains approximately its own value in water.

b. In extreme heat and dust. In extreme heat operations are normal with the exception of more frequent lubrication. Excessive heat tends to make the lubricants break down more rapidly. During a sand or dust storm the equipment must be protected by tarpaulins. After a dust or sand storm, exposed parts, such as bearings, gears, sprockets, and drive chains, must be checked. If they are gritty, they must be removed, cleaned, relubricated, and reinstalled. Motors must be cleaned by blowing them out with compressed air. Washers, extractors, and tumblers must be wiped out on the inside and washed with clean water before operations are resumed.

c. At high altitude. At high altitudes no special precautions need be followed, but several adjustments are necessary. Carburetors on the electric-generator plant and gasoline-driven pump must be adjusted. TM 10-1680 gives detailed information for operating the laundry unit at high altitudes.

40. SHIFTS AND CAPACITIES. **a. Shifts.** The laundry company table of organization is designed to provide operating personnel for two 8-hour shifts. The minimum operating strength for the section is provided by one marker, one folder and resizer, one washman, and one tumblerman.

b. Capacities. A section, the basic operating unit,

working 16 hours a day, 7 days a week can provide service for an estimated 2,100 troops each week. On the same basis, the platoon can service 8,400 troops weekly; the company, 33,600 troops. This estimate is based on an average bundle weight of approximately 5½ pounds per man. The production rate for the section is about 125 pounds per hour; for the platoon, 500 pounds; and for the company, 2,000 pounds. It is important to know the operating capacity in units of pounds when the laundry is doing bulk work for hospitals, reclamation, or clothing exchange and bath units. Laundry foremen and officers should be able to convert work received in bulk to a poundage basis by inspection.

Note. The above capacities are based on the laundering operation only. This operation excludes dry cleaning, pressing, and degassing.

Section II. RECORDS AND REPORTS

41. PRODUCTION RECORDS. a. Production records of laundry operations normally are prescribed by higher authority. The minimum records to be kept consist of—

- (1) A periodic record of work done either by item or by bundle, depending upon the type of service being given.
- (2) A record of supplies used and supplies on hand.
- (3) A record of units serviced and a schedule of receiving and pickup dates.

b. The forms used may be prescribed by higher authority or may be improvised to meet the needs of the company.

42. TECHNICAL REPORTS TO HIGHER HEADQUARTERS. a. Normally, technical reports to higher headquarters will consist of summaries of production records. The reports should include the following information:

- (1) Number of trailers operating.
- (2) Hours in operation for each trailer.
- (3) Number of pounds or number of bundles laundered for indicated installations.
- (4) Operating supplies used and operating supplies left in balance.
- (5) Lists of supplies, spare parts, or tools critically short.
- (6) Remarks pertaining to proper functioning of laundry units.

b. The following forms are among those authorized to quartermaster fixed laundries. They may be useful also to mobile laundry companies.

- (1) WD AGO 10-73, Monthly Roster and Statement.
- (2) WD AGO 10-75, Report of Laundry and Dry-Cleaning Operations.
- (3) WD AGO 10-82 (QMC 375) Abstract of Enlisted and Bulk Work—Quartermaster Laundry.

c. A suggested weekly laundry report may be found in appendix IV.

43. UNIT JOURNAL AND HISTORY. A unit journal and history should be maintained. The journal should be an accurate, objective record of events, actions, and operations. All available sources of information, including personal recollections of the personnel involved, should be utilized. The journal

should be carefully documented; the sources used for all statements of fact should be cited. Particular emphasis should be placed on operating information and suggestions which can be used to advantage by similar units operating under similar conditions. When the manuscript is complete, it should be forwarded through regular channels to the Historical Records Section, Department of the Army, Records Branch, AGO.

3

Section III. OBTAINING TECHNICAL OPERATING SUPPLIES

44. SOURCES OF SUPPLY. In the communications zone the laundry company operating supplies will be drawn directly from the nearest depot; in the combat zone, from Army depots.

45. METHODS OF OBTAINING SUPPLIES. a. When a platoon is operating separately, supplies will be drawn by the platoon leader on requisition to the supply officer of the organization to which attached. Where the operating units of the laundry company are close enough together, all property and supply considerations will be controlled by company headquarters, and the operating units will draw operating supplies from that source. The quantities requisitioned will normally be based on past consumption, which will vary somewhat according to local conditions. Requisitions will be submitted in accordance with standard operating procedure and will contain the following information:

- (1) Number of bundles processed during previous month.

(2) Number of pieces processed during previous month.

(3) Any additional explanatory information.

b. If records containing data indicated in (1) and (2) above do not exist, the number of persons expected to receive laundry service may be used as a basis of calculation.

c. The authorized supplies required for each mobile laundry company for 3 months are as follows:

(1) Detergent, mobile laundry (synthetic soap), liquid (for warm climates): 3,245 gallons.

(2) Detergent, mobile laundry, powder (for cold climates): 3,245 pounds.

(3) Sour, laundry: 500 pounds.

Note. These quantities are based on two loads per hour, operating 96 hours per week.

46. HANDLING OF SUPPLIES. Each section will usually store its operating supplies (soap and sour) in the section squad tent used for control, storage, and issue of supplies. The soap and sour containers should be placed on dunnage and be well protected from moisture. The washmen will keep a supply of soap and sour within reach of the washer trailer and will replenish this from the supply tent as necessary.

Section IV. OPENING-UP, TAKING-OVER, AND CLOSING-OUT OPERATIONS

47. OPENING-UP OPERATIONS. As soon as the mobile laundry unit arrives at the new operating site, communications will be established with the headquarters to which the laundry unit is responsible and with the units which are to receive laundry service.

The headquarters to which the laundry unit is responsible should be given the following information immediately:

- a. Estimated time when the laundry will be ready to begin operations.
- b. Number of pounds of laundry the unit is capable of processing per day.
- c. A report of the volume of operating supplies on hand.
- d. A statement of critical shortages of any kind.
- e. If individual bundle work is to be done, a laundry schedule will be made.

48. TAKING-OVER OPERATIONS. a. When the laundry unit is taking over the operations and area of another laundry unit, the responsible officer should observe the following procedure:

- (1) Check existing laundry schedule and make any changes necessary.
- (2) Notify using units of the time laundry will begin operation and of any changes made in the laundry schedule.

b. When an officer is taking over command of a laundry unit from another officer, he will assure that all equipment and supplies are accounted for and that all administrative matters are properly checked as prescribed by regulations.

49. CLOSING-OUT OPERATIONS. When closing out the operations of the mobile laundry unit, the responsible officer will observe the following procedure:

- a. Prepare movement plan.
- b. Notify using units of the exact time when bun-

dles must be picked up and the exact time when operations will cease.

c. Notify headquarters of the exact time when operations will cease and the approximate time of departure.

d. See that after the supplies and equipment have been loaded, the operating and bivouac area is carefully policed.

CHAPTER 7

SECURITY, AND CAMOUFLAGE

50. SECURITY. a. General. The mobile laundry company must be prepared to provide its own security and to defend itself against air, ground, chemical, or mechanized attack. Generally, the company will fit into the defensive plan prescribed by higher headquarters. However, unexpected situations will often arise, and the company, separate platoons, and separate sections must be able to act alone if the occasion demands. Every man in the company should understand the principles of passive and active defense, the use of weapons, the demolition of supplies and equipment, and the use of camouflage and cover.

b. Bivouac security.

- (1) The general location of the company bivouac will be determined by the command to which the company is assigned. After the general area is assigned, the company commander (or platoon leader or section leader in the case of separate units) should select the specific location, taking into consideration convenience to the operation location, suitability of the ground, presence of overhead cover to prevent aerial observation, and accessibility to the road net. If possible, the area chosen should be well-drained high ground which is

defensible. Adequate space should be available to provide for dispersion.

- (2) The bivouac area must be prepared for perimeter defense. The defense plan of the company should provide a job for every man and should be rehearsed until action in case of attack is automatic. The principles given in FM 72-20 for the security and defense of a bivouac area are applicable to the laundry company.
- (3) The defense plan must be flexible so that it can be adapted to the terrain and to the tactical situation. In general, the outer ring of sentries should be about 1,000 yards from the command post. These sentries will serve as guards against attack by air or land or by chemical agents. The outer ring of guards should remain under cover and be checked at intervals by a roving patrol. (See FM 21-75.) The rest of the men will be held in reserve near the command post and will be committed only after the direction of the attack has been determined. Mines, booby traps, and road blocks can be used to strengthen the position.

c. Individual security. Each man must make his own preparations for security when attack is possible. His weapon must be ready for action and he must know how to use it. He must dig his foxhole, prone shelter, or other hasty fortification when the situation requires. (See FM 5-15.)

51. CAMOUFLAGE. **a.** The principal defense of the mobile laundry installation is concealment. If nat-

ural concealment, such as woods, is not available at the bivouac and operating sites, camouflage must be used. The men of the mobile laundry company must be impressed early with the importance of camouflage discipline. Troops must remain concealed, follow established roads and paths, disguise any substance which might reveal their position by color or light reflection, and be careful not to change the appearance of existing buildings and terrain features. Such stratagems as the use of dummy roads must be taught. Company officers and noncommissioned officers must constantly impress upon the troops the fact that the carelessness of one man may disclose the position of the unit and endanger the whole group.

b. The following publications describe camouflage procedure:

- (1) FM 5-20 (Camouflage, Basic Principles).
- (2) FM 5-20A (Camouflage of Individuals and Infantry Weapons).
- (3) FM 5-20B (Camouflage of Vehicles).
- (4) FM 5-20C (Camouflage of Bivouacs, Command Posts, Supply Points, and Medical Installations).
- (5) FM 5-20G (Camouflage of Rear Areas and Fixed Fortifications).
- (6) FM 5-20H (Camouflage Materials and Manufacturing Techniques).

CHAPTER 8

MOVEMENT

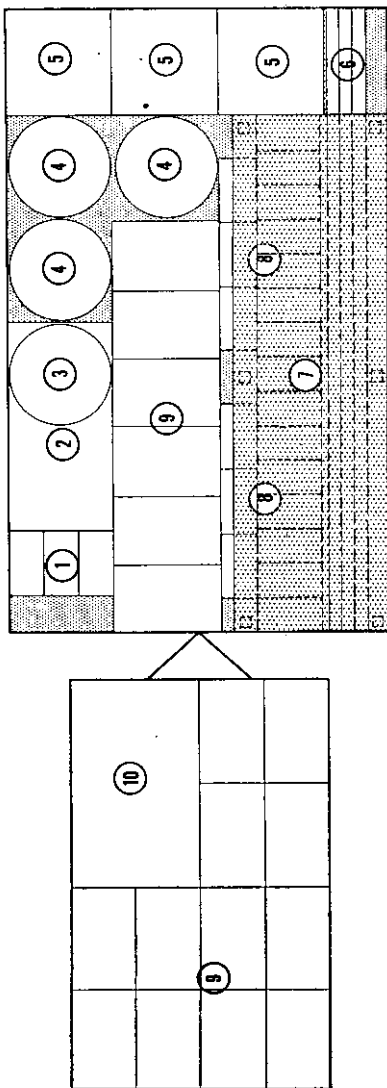
Section I. MOVEMENT BY MOTOR

52. REQUIREMENTS. The mobile laundry company is not provided with sufficient organic transportation to move its complement of personnel and equipment simultaneously. If the company is called upon to move in one convoy, additional transportation facilities must be requested of higher authority. A total of twenty-four 2½-ton trucks will be required to move the laundry trailers, personnel, and additional equipment.

53. PLAN FOR MOVEMENT. a. **Loading plan.** To insure speed and efficiency of movement, loading plans should be as uniform as possible throughout the laundry company. The following is a suggested loading plan for company headquarters and one platoon which may be amplified to include the whole company (see figs. 11, 12, 13, and 14):

Truck			Truckload
Number	Type	Position in convoy	
1	¼-ton	1	Company commander.
1	2½-ton	2	Kitchen truck towing 1-ton cargo trailer.
1	2½-ton	3	Tool sets, stacked tentage, tent poles, tent pins, canvas water tank. Truck towing water trailer.
1	2½-ton	4	Stacked gasoline drums, tent stoves, stove accessories. Truck towing tumbler trailer.
1	2½-ton	5	Field desks, electric lighting equipment, nested laundry baskets, stacked laundry tables, stacked protective items, buckets, field safe. Truck towing washer trailer.
4	2½-ton	6, 7, 8, 9	Each truck carrying personnel and towing either tumbler trailer or washer trailer.
1	2½-ton	10	Truck towing tumbler trailer.
1	2½-ton	11	Truck towing washer trailer.
1	¾-ton	12	Personnel (automotive mechanic). ¹

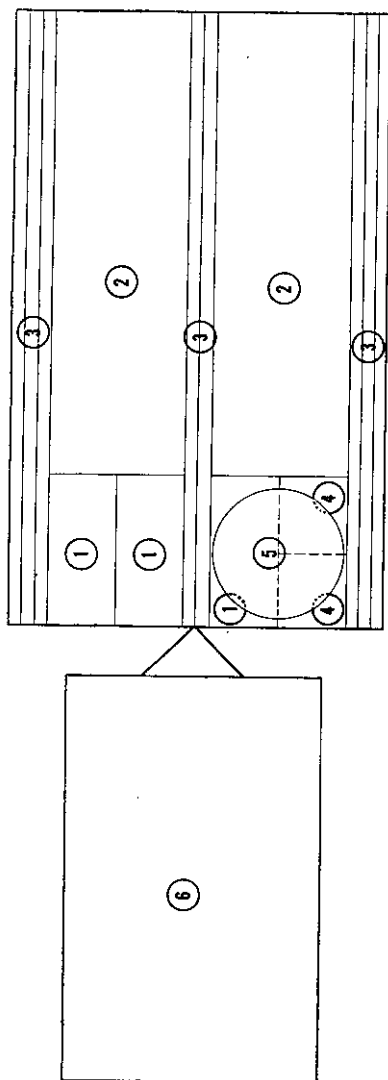
¹ The automotive mechanics will bring up the rear of the column to repair any vehicles that have broken down.



LEGEND

- | | |
|------------------------------------|------------------------|
| 1. GASOLINE DRUMS | 6. TENT POLES AND PINS |
| 2. TWO UNIT STOVE | 7. KITCHEN TABLE |
| 3. LISTER BAG | 8. WATER CANS |
| 4. CORRUGATED CAN IMMERSION BURNER | 9. RATONS |
| 5. ONE UNIT STOVE | 10. TENT FLIES |

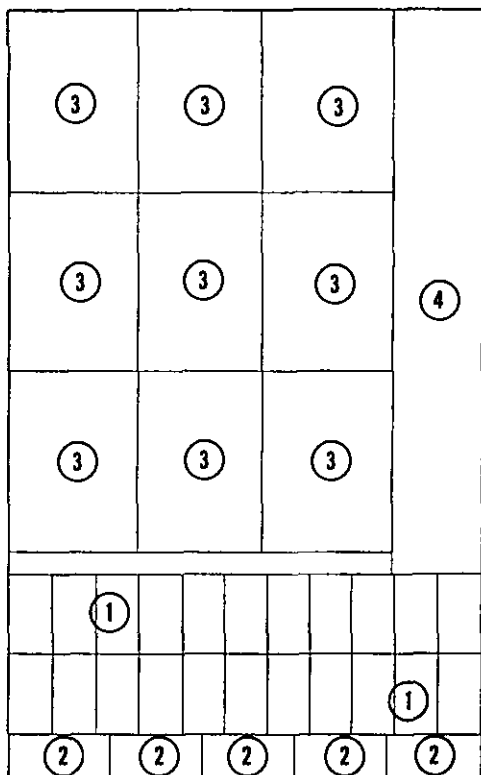
Figure 11. Kitchen truck (No. 1 in convoy).



LEGEND

- 1. TOOL SET
- 2. STACKED TENTAGE
- 3. TENT POLES
- 4. TENT PINS
- 5. CANVAS WATER TANK
- 6. WATER TRAILER

Figure 12. Tentage truck (No. 2 in convoy).

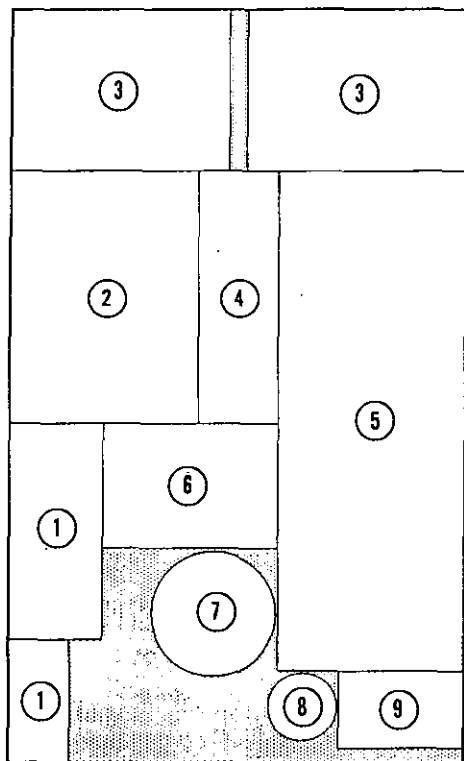


REAR OF TRUCK

LEGEND

1. STACKED GASOLINE DRUMS
2. GASOLINE DRUM LENGTHWISE
3. TENT STOVE
4. STOVE ACCESSORIES

Figure 18. Stove truck (No. 3 in convoy).



REAR OF TRUCK

LEGEND

- | | |
|--------------------------------|-----------------------------|
| 1. FIELD DESK | 6. STACKED PROTECTIVE ITEMS |
| 2. ELECTRIC LIGHTING EQUIPMENT | 7. NESTED CORRUGATED CANS |
| 3. NESTED LAUNDRY BASKETS | 8. BUCKETS |
| 4. STACKED TOOL SETS | 9. FIELD SAFE |
| 5. STACKED LAUNDRY TABLES | |

Figure 14. Laundry equipment truck (No. 4 in convoy).

b. March graphs. Special attention is directed to the march graphs and tables covered in FM 25-10. Comprehensive study of this manual and any other official publications on motor movements should be made before movement by motor is begun.

c. Report to commander of new station. On departure from the home station, the company commander will report to the commander of the new station (by air mail letter, radio, or teletype) the following information:

- (1) Route, place, and date of long halts or bivouacs, with the duration of such halts indicated.
- (2) Number of serials, number of vehicles in each, date and hour of departure, and scheduled arrival of each serial at designated point.
- (3) Number of officers and number of enlisted men, by grades.
- (4) Number and types of pieces of wheeled equipment.

d. Assignment of jobs.

- (1) *Advance agent.* To facilitate supply, the company commander should designate one of the platoon leaders as the advance agent. The advance agent will be responsible for procuring initial supplies at the home station, establishing refueling points along the route of march, purchasing additional supplies as they are required, and making billeting arrangements. The officer designated should immediately report to the station finance officer for instructions and make arrangements to be appointed agent officer. Upon arrival at destination, the agent officer

will render an accounting to the disbursing officer for the new station.

- (2) *Drivers.* The drivers will drive the vehicles to which they normally are assigned. The additional vehicles will be driven by men who have qualified as drivers.
- (3) *Clean-up party.* A clean-up party should be designated to inspect bivouac areas and halt sites after they are vacated by the column. In peacetime the officer with this party completes necessary paper work in connection with leased camp sites and any claims arising from damage to private or public property.
- (4) *Reconnaissance party.* A reconnaissance party should be designated to select halting and bivouac areas in advance.
- (5) *Maintenance personnel.* The driver and assistant driver of each vehicle are responsible for preventive maintenance within the limits of their ability and with the equipment available for their use. Vehicle technical manuals for each truck should be studied carefully.

e. Rate of march. During peacetime, and during war when tactical considerations do not interfere, the following may be used as a guide in planning an average day's motor march:

- (1) Preparation for march (including time for breakfast, inspection of vehicles, and breaking camp)—1 hour.
- (2) Running time (including all halts except noon halts)—7 to 8 hours.
- (3) Halt for lunch and refueling—1 hour.

- (4) Inspection and servicing of vehicles after arrival at camp—1 hour.

Note. No attempt should be made to travel more than 200 miles a day. Average convoy speed should be about 25 miles per hour. The individual vehicle should not exceed 35 miles per hour.

f. Bivouac. In the zone of the interior overnight stops should be anticipated so that troops will arrive at the bivouac area between 3 and 4 o'clock in the afternoon. If possible, arrangements for billeting and messing facilities should be made with the military establishments along the route of march. However, if free billeting is not available, camp sites and buildings may be rented.

Section II. MOVEMENT BY RAIL

54. REQUIREMENTS. a. General. If the full complement of personnel and equipment is being transported, the laundry company will require 4 to 5 passenger cars for troops, 15 to 16 flatcars or drop-end gondolas for the vehicles, and 1 boxcar for heavy baggage and organizational equipment. (These requirements will vary in the theater of operations when foreign railroads are used.) For more detailed information on movement by rail see AR 55-130, AR 55-135, AR 55-145, AR 55-155, and AR 55-160. TM 10-1680 gives detailed information on preparing the laundry equipment and vehicles for rail shipment.

b. Transportation requirements. As soon as the company commander receives orders to move his company by rail, he will submit his transportation requirements in letter form to the local transportation officer

in order to procure adequate transportation facilities. The letter will contain the following information:

- (1) Orders or instructions authorizing the movement.
- (2) Name of organization.
- (3) Number of officers, enlisted men, and vehicles.
- (4) Quantity of public property and authorized and checkable personal baggage.
- (5) Date and place of entraining (if movement is in zone of interior).
- (6) Destination (if movement is in zone of interior).

55. PLAN FOR MOVEMENT. The company commander will be informed by the shipping transportation officer where the freight and passenger equipment will be placed and the time at which the equipment will be in position for loading. It is the commander's responsibility to see that all plans are complete and that all necessary assignments of personnel are made for the movement of the unit.

a. Entraining officer. The company commander will detail one of the platoon leaders for duty as entraining officer. (See AR 55-145.) The duties of the entraining officer are as follows:

- (1) To make a reconnaissance of the approaches to the entraining point in order that entraining may proceed without confusion, delay, or interruption from traffic.
- (2) To superintend the loading of both personnel and property.
- (3) To take the necessary steps to prevent delay in the loading of freight and baggage and to make sure that the loading is properly done.

- (4) To collect the checkers' lists (see **b** (5) below) and transmit them to the shipping transportation officer without delay.
- (5) To proceed to the entraining point in advance of the command and supervise the assignment of men to the cars; to allow only one entrance to each car to be used; and to instruct the men entering the car to go directly to their seats.

b. Train transportation officer. The company commander will detail one of the platoon leaders for duty as train transportation officer. The duties of the train transportation officer are as follows:

- (1) To make a record of the transportation requests as prescribed by AR 55-145.
- (2) To arrange with the train conductor to have the transportation requests taken up by the latter on the train. If such an arrangement cannot be made, the transportation officer must obtain tickets by presenting the transportation requests to the station agent prior to departure.
- (3) Accompanied by the train conductor, to count the passengers as soon after departure as is practicable.
- (4) To prepare a bill of lading for organizational equipment in accordance with instructions in AR 55-145, to be turned over either to the agent of the last carrier or to the transportation officer at the destination.
- (5) To designate one noncommissioned officer for each car as checker. He will list the property loaded and record the data required for the preparation of the bill of lading.

c. Baggage detail. It is the company commander's responsibility that a baggage detail be formed, from the enlisted personnel, to load and unload the baggage.

d. Guard detail. It is the company commander's responsibility that a guard detail be formed from the enlisted personnel. At least two men should ride in each unsealed freight car to guard the company equipment.

e. Additional duties of the company commander. In addition to the duties already mentioned, the company commander will be responsible for the following:

- (1) Report of the exact time and date of departure to the theater traffic control division by telegram immediately before departure. Upon arrival at the destination, he also will report the exact time and date of arrival. In his report, he will indicate the movement by routing number only.
- (2) Appointment of a mess officer, who will supervise the preparation and serving of meals.
- (3) Issuance of orders to his company in conformity with AR 55-145.
- (4) Maintenance of a complete record of delays en route and any other occurrences which compel the use of railway equipment after the scheduled hour of arrival at destination. Such record will answer questions which may arise as to the improper use of railway facilities.
- (5) Inspection of railway equipment which has been vacated, with the object of determining whether any railway property has been damaged or unlawfully removed. He will report

the result of this inspection in writing to the commanding officer of the new home station.

- (6) Required railroad transportation and/or accommodation certificates.

f. Detraining. If possible, train schedules should provide for arrival at the destination during daylight. Troops will be notified of the hour of arrival in ample time to enable them to be prepared to detrain promptly. The officers and the guard detail will detrain first. The baggage detail will be left to unload and bring up the property. Where the camp is distant from the detraining point, arms may be stacked and the property unloaded by the entire company. The noncommissioned officers who acted as checkers when the property was loaded will, if practicable, be assigned to the same duty in unloading.

g. Report required for separate freight shipments. When a freight shipment is made separately from a movement of personnel, the report to the commandant of the new station should contain the following information:

- (1) Routing by rail.
- (2) Car numbers (boxcar or flatcar) and general description of contents.

56. PACKAGING, BLOCKING, AND BRACING.

a. General. It is the responsibility of the company commander to make sure that all company equipment is properly packaged, blocked, and braced. All railway shipments of mobile laundry equipment will comply with the requirements and instructions given in the following publications:

- (1) Specification JAN-P-100.
- (2) Army Specification No. 100-14B.

- (3) Rules Governing the Loading of Commodities on Open Top Cars, published by the Association of American Railroads.
- (4) The Code of Rules for Loading Closed Cars, published by the Operating-Transportation Division of the Association of American Railroads.
- (5) AR 55-155.

b. Packaging. In general, the following factors should be considered in deciding which container to use in a given instance (see tables I and II):

- (1) Suitability to articles to be packed.
- (2) Availability.
- (3) Tare weight.
- (4) Cubic displacement.
- (5) Ease in handling and storing.
- (6) Cost.

c. Blocking and bracing. Standard operating procedure for blocking and bracing of vehicles for rail shipment may be found in Rules Governing the Loading of Commodities on Open Top Cars, published by the Association of American Railroads, Washington, D. C. Detailed drawings of methods of blocking and bracing vehicles may be found in appendix V. The following instruction may be used as a general guide:

- (1) One block outside of each wheel is ordinarily sufficient to prevent lateral movement, but security against longitudinal movement requires two chocks to each wheel, one in front and one in rear.
- (2) As an additional precaution, whenever the material is available, an inside block should also be used and a rope or strap of burlap or

canvas should be passed over the felloe, one turn being made around each block.

- (3) Chocks must be at least 3 inches high, and lumber used for blocking must not be less than 2 by 4 inches.
- (4) Five-inch spikes or forty-penny nails should be used to secure chocks and blocks to the floor of the car.
- (5) Heavy wire (No. 8 ga. black annealed wire or its equivalent) should be used for securing loads.
- (6) Crates and packages must be shored and braced in accordance with usual practices.

Section III. MOVEMENT BY AIR

57. PREPARATION FOR MOVEMENT. a. Orders for movement by air are issued to the commander of the laundry company by higher authority. At the same time, the air task force commander will receive orders to move the laundry company. When the orders for air movement are received, the laundry company commander will prepare a report for the air task force commander. The report will contain the following information:

- (1) Total weight and cubage of organizational equipment and supplies.
- (2) List of bulky items, including weight, cubage, and number of items.
- (3) Number of personnel.
- (4) Amount of baggage.

b. The air task force commander will prepare a plan for movement, based on the report from the laundry company commander, which he will submit to higher authority for approval.

Table I. Guide to Choice of Interior Packing for Shipment of Mobile Laundry Equipment and Supplies

Article	Type of handling required							
	Bracing	Bolting	Flotation		Cartons and cans	Loose	Surface protection	Repacking
			Heavy-weight	Light-weight				
Structural parts, metal or wood	N	N	---	---	---	---	---	---
Major items, machines	N	N	N	---	N	---	N	N
Tools and machine parts	N	N	---	---	---	---	N	N
Loose articles not liable to damage during transportation	---	---	---	---	---	---	---	---
Hardware and fittings	N	N	N	N	N	N	N	N
Wire and cable	N	N	N	---	---	---	N	N
Furniture, office and field	N	N	---	---	N	---	---	N
Office machinery	N	N	N	---	N	---	---	N
Kitchen and sanitary equipment	N	N	N	---	N	---	N	N

Table II. Guide to Choice of Outer Container for Shipment of Mobile Laundry Equipment and Supplies¹

Article	Nailed wood crate	Cleated plywood box	Nailed wood box	Wire-bound box	Fiber box ²	Bale	Bundle
Structural parts, metal or wood	X						X
Major items, machines	X	X	X	X	X		
Tools and machine parts	X	X	X	X	X		
Loose articles not liable to damage during transportation						X	X
Hardware and fittings		X	X	X	X		
Wire and cable		X	X	X	X		
Furniture, office and field	X	X	X	X	X		
Office machinery	X	X	X	X	X		
Kitchen and sanitary equipment	X	X	X	X	X		

¹ This table does not cover those items governed by I. C. C. regulations on transportation of explosives and other dangerous articles.

² Maximum weight of box and contents, 70 pounds for solid fiber box.

58. PLAN FOR MOVEMENT. a. Plans of laundry commander. The detailed plans prepared by the laundry commander will include the following:

- (1) Movement of unit from present location to vicinity of the departure airport, with marching and entraining tables.
- (2) Movement to loading points at departure airport.
- (3) Loading of trucks to correspond to loading of airplanes, if possible.
- (4) Orders for movement to loading points, including such matters as time, route, and loading arrangements.

b. Supplies and equipment load. In the zone of the interior, if the orders to move do not include specific items of supply and equipment to be excluded from the air shipment, the company commander will determine—

- (1) Tentage available at destination.
- (2) Operating equipment available at destination.
- (3) Vehicles at destination which may be utilized in place of authorized vehicles.

c. Packaging and packing. The procedures for packing and packaging for air transportation are similar to those discussed in paragraph 56. Special emphasis should be placed on lightness of crating materials.

d. Personnel and baggage. The type of plane, whether cargo, personnel, or personnel-cargo, will be determined by the air task force commander. Personnel baggage will be carried either in the same plane with the men or in separate cargo planes.

CHAPTER 9

SAFETY PRECAUTIONS AND FIELD EXPEDIENTS

59. SAFETY PRECAUTIONS. Operators will be thoroughly trained in the correct safety procedures which pertain to the equipment of the mobile laundry unit. All safety devices installed on the equipment will be kept in operating condition and all personnel instructed as to their use and purpose. Personnel who are not operators will be kept out of the operating site. Since fire is the most dangerous hazard in field laundry operations, it is of great importance that operators observe the following safety rules at all times.

a. Know location of fire extinguisher and make sure that it is kept filled to proper level.

b. Keep sand buckets handy for use against incendiary bombs.

c. Do not throw water on fires caused by electrical equipment, because electrocution may result. Use sand or dirt.

d. Do not refuel gasoline engine, hot water heater, or tumbler heater while equipment is in operation.

e. Do not leave gasoline or fuel oil cans on trailer.

f. Do not use gasoline to clean the machinery and motor parts unless the motor is disassembled for repair

and then only in the open, or in a well ventilated tent or building.

g. In filling fuel tanks, make sure that correct fuel is put in the proper tanks.

h. Do not allow rubbish or rags to accumulate on the trailers.

i. Always store gasoline and fuel oil outside of building, preferably underground.

j. Fuel drums should be dispersed so as not to present a worth-while bombing target.

k. Be sure that the storage area for gasoline or fuel oil is far enough from the unit to prevent any possibility of fire from motor exhaust on the trailer and to prevent the trailer from igniting if the fuel in the storage area catches fire.

l. Keep constant watch for leaks. Cover any spilled gasoline with sand or dry earth.

m. Mark fuel storage areas with proper signs.

n. Check all fuel containers before they enter the storage area and keep a constant check thereafter. All signs of corrosion, leakage, and general deterioration should be dealt with immediately.

o. Never leave clothing in tumbler after machine has stopped, because spontaneous combustion may result.

p. Keep tumbler, motors, and adjacent areas free of lint, dust and unnecessary oil and grease.

q. Use sand, steam, mud, and blankets to smother fire when the usual hand extinguishing apparatus is not available.

r. Do not smoke near trailers or while filling drums and tanks with inflammable fluids.

s. No smoking areas will be clearly marked by signs, and the prohibition enforced.

60. FIELD EXPEDIENTS. The operations of a laundry unit are of such nature that efficiency in the field may frequently be increased by improvisations in equipment. The following expedients have been used to advantage in the field:

a. When the washer trailer is operating at a very heavy load, a drainage ditch instead of the drainage hose may be used to carry off waste water provided there is sufficient gradient to prevent overflowing of the ditch.

b. Time and labor may be saved in transporting clothes from one area to another within the laundry installation by stringing a tight wire on which a small trolley is suspended. The bags of clothing may be hooked to the trolley, and if the apparatus is correctly arranged, a strong push will move the clothes from one location to another.

c. By placing laundry baskets on a hand cart, laundry baskets can be moved by one man, thus easing the burden of carrying the clothes within the area.

d. If there is a shortage of detergent, a substitute can be made by placing GI soap in a gasoline drum and dissolving it in hot water in the proportion of 3 pounds of soap to 4 gallons of water. It may be necessary to boil the solution to dissolve the soap.

e. When it is impossible to locate the laundry adjacent to a stream, an improvised water carrier can be made by placing a large tank made of canvas in a standard 2½-ton truck. The tank should be divided into four sections by means of splash plates, so that the water will not splash forward and leave the truck in the event of sudden stops.

CHAPTER 10

DEMOLITION OF MATÉRIEL TO PREVENT ENEMY USE

61. GENERAL. **a.** The demolition procedures outlined in paragraphs 62 and 63 will be used to prevent the enemy from using or salvaging this equipment. Demolition will be accomplished *only* upon order of the commander.

b. Demolition procedures should be standardized, simple, rapid, and effective. When possible, equipment should be demolished where it will most effectively impede enemy movement, as in road defiles. The tactical situation, time, and tools available govern the method to be used.

c. Be sure that destruction is as complete as the available facilities and time will permit. Destroy the same parts of all identical assemblies to prevent enemy use by salvage. If thorough destruction of assemblies and parts cannot be completed, destroy the most important assemblies. Destroy or remove parts essential to the operation of the assembly.

d. If explosives are to be used, personnel must take adequate safety precautions. Because of flying fragments and ricocheting ammunition, destruction of equipment by explosives or weapons fire should be confined to areas free of friendly troop concentration. (See FM 5-25.)

62 METHODS OF DESTRUCTION

a. Smash. Use sledges, axes, handaxes, pickaxes, hammers, crowbars, and heavy tools.

b. Cut. Use axes, handaxes, and machetes.

c. Burn. Use gasoline, kerosene, oil, flame throwers, and incendiary grenades.

d. Other. Use anything immediately available for the destruction of this equipment.

e. Disposal. Bury in slit trenches, fox holes, and other holes. Throw in streams. Scatter.

63. Destruction of Components

a. Smash engine cylinder head, cylinder walls, crankcase, magneto, carburetor, governors, fan, generator control panel and instruments, generator exciter housing and bearings; electric motors, manual motor starters, and component assembly controls and instruments; break valves and valve stems, if possible; portable pump, tumbler, washer, extractor, water heater, cylinders, and basket and burner assemblies.

b. Puncture fuel tanks, engine radiator, engine oil pan, washer lower shell, and extractor in several places.

c. Cut hose, electrical cable, cords, conduits, connections, drive belts, drive chains, and trailer tires.

d. Fire boiler without water in tank.

e. Bury or scatter all the above pieces after destroying.

f. Destroy everything.

APPENDIX I

REFERENCES

1. ADMINISTRATION.

- TM 12-250 Administration.
- TM 12-255 Administrative Procedures.

2. INDEXES.

- FM 21-8 Military Training Aids.
- SR 110-1-1 Index of Army Motion Pictures and Film Strips.
- SR 310-20-3 Index of Field Manuals, Training Circulars, Firing Tables and Charts, Graphic Training Aids, Army Training Programs, JANAP's, Combined Communications Board publications, Tables of Organization and Equipment, Tables of Allowances, and Tables of Basic Allowances.
- SR 310-20-4 Index of Technical Manuals, Technical Bulletins, Supply Bulletins, Lubrication Orders, and Modification Work Orders.
- SR 310-20-5 Index of Administrative Publications.
- SR 310-20-6 Index of Blank Forms and Army Personnel Classification Tests.

3. LAUNDRY OPERATIONS AND MAINTENANCE.

- FM 20-15 Tents and Tent Pitching, Cl.
- FM 10-10 Quartermaster Service in the Theater of Operations.
- TM 3-220 Decontamination.
- TM 10-355 Quartermaster Fixed Laundry Procedure.
- TM 10-1670 Laundry, Portable, Skid-Mounted, Small Detachment.
- TM 10-1680 Laundry, Mobile, Two-Trailer Type.

4. MESS MANAGEMENT.

- TM 10-205 Mess Management and Training.
- TM 10-400 Stoves, Ranges, Ovens, and Cooking Outfits.
- TM 10-405 The Army Cook.
- TM 10-407 Cutting Beef.
- TM 10-408 Cutting and Preparing Lamb.
- TM 10-412 Army Recipes.

5. MILITARY TRAINING.

- FM 5-15 Field Fortifications.
- FM 5-20 Camouflage, Basic Principles.
- FM 5-20A Camouflage of Individual and Infantry Weapons.
- FM 5-20B Camouflage of Vehicles.

FM 5-20C	Camouflage of Bivouacs, Command Posts, Supply Points, and Medical Installations.
FM 5-20G	Camouflage of Rear Areas and Fixed Fortifications.
FM 5-20H	Camouflage Materials and Manufacturing Techniques.
FM 5-31	Land Mines and Booby Traps.
FM 20-15	Tents and Tent Pitching.
21 series of Field Manuals.	
FM 22-5	Leadership, Courtesy, and Drill.
FM 23-7	U. S. Carbine, Caliber .30, M1 and M1A1.
FM 23-30	Hand and Rifle Grenades, Rocket, AT, HE, 2.36-inch.
FM 26-5	Interior Guard Duty.

6. MOTOR OPERATION AND MAINTENANCE.

FM 25-10	Motor Transport.
TM 10-560	Chassis, Body, and Trailer Units.
TM 21-300	Driver Selection, Training and Supervision, Wheeled Vehicles.
TM 21-305	Driver's Manual.
TM 37-2810	Motor Vehicle Inspections and Preventive Maintenance Services.
	Vehicle Technical Manuals.

7. SPECIAL OPERATIONS.

- FM 31-25 Desert Operations.
- FM 70-10 Mountain Operations.
- FM 70-15 Operations in Snow and Extreme Cold.
- FM 72-20 Jungle Warfare.

8. TRAINING DOCTRINE AND PROGRAMS.

- FM 21-5 Military Training.
- TM 21-250 Army Instruction.
- MTP 10-1 Mobilization Training Program for Quartermaster Enlisted Personnel of the Army Service Forces.
- MTP 10-2 Mobilization Training Program for Quartermaster Units of the Army Service Forces.
- MTP 10-3T Mobilization Training Program for Advanced Unit Training of Quartermaster Units of the Army Service Forces.
- ATP 21-1 Military Training Program for Newly Enlisted Personnel of the Army other than Air Forces.

2 9. TRANSPORTATION.

- FM 25-10 Motor Transport.
AR 55-130 Transportation of Troops and Other Groups, General.
AR 55-135 Transportation of Troops; Railway Equipment.
AR 55-145 Transportation of Troops; Entraining, Duties En Route, and Retraining.
AR 55-155 Transportation of Public Property (Except Animals) and Remains.
AR 55-160 Transportation of Authorized Baggage.
JAN-P-100 Packaging and Packing for Overseas Shipment.
Army Specification No. 100-14B.
Rules Governing the Loading of Commodities on Open Top Cars, published by the Association of American Railroads.
The Code of Rules for Closed Cars, published by the Association of American Railroads.
DA Pamphlet 29-15 Movement Regulations, Air Transportation.

10. UNIT SUPPLY.

- DA Catalog (pertinent sections).
TM 38-403 Station Supply Procedure.
SR 725-200-1 Authorized Supplies for Quartermaster Laundries and Dry-Cleaning Plants.

APPENDIX II

TABULATED DATA

1. WASHER TRAILER.

Height.....	84 inches.
Width.....	78 inches.
Length.....	14 feet.
Cubage.....	637 cubic feet.
Area of car floor occupied.....	91 square feet.

2. DRYING TUMBLER TRAILER.

Height.....	84 inches.
Width.....	78 inches.
Length.....	14 feet.
Cubage.....	637 cubic feet.
Area of car floor occupied.....	91 square feet.

APPENDIX III

FORMULAS

1. WHITE AND COLORED COTTON CLOTHING. The formula for washing white and colored cotton clothing is as follows:

Operation	Water level (in.)	Time (min.)	Temperature (deg. F.)	Supplies (oz.)
1. Suds	6	5	110	Detergent (3)
2. Suds	5	5	140	Detergent (3)
3. Rinse	9	3	140	
4. Rinse	9	3	120	
5. Rinse	9	3	100	Sour (3)

2. WOOL CLOTHING AND BLANKETS. The formula for washing wool clothing and blankets is as follows:

Operation	Water level (in.)	Time (min.)	Temperature (deg. F.)	Supplies (oz.)
1. Suds	6	5	100	Detergent (3)
2. Suds	6	5	100	Detergent (3)
3. Rinse	10	3	100	
4. Rinse	10	3	100	
5. Rinse	10	3	100	Sour (3)

3. HOSPITAL WORK. The formula for laundering hospital work (cotton fabrics only) is as follows:

Operation	Water level (in.)	Time (min.)	Temperature (deg. F.)	Supplies (oz.)
1. Suds.....	6	5	100-110	Detergent (3)
2. Suds.....	6	5	180	Detergent (3)
3. Suds.....	5	5	180	Detergent (3)
4. Rinse.....	9	3	180	
5. Rinse.....	9	3	160	
6. Rinse.....	9	3	120	Sour (3)

4. PERMEABLE CLOTHING. The formula for laundering permeable protective clothing when the impregnate is to be removed is as follows:

Operation	Water level (in.)	Time (min.)	Temperature (deg. F.)	Supplies (oz.)
1. Suds.....	8	60	145	{ Kerosene (4) ¹ Detergent (2)
2. Rinse.....	9	2	120	
3. Suds.....	9	5	140	Detergent (12)
4. Suds.....	9	5	140	Detergent (6)
5. Rinse.....	9	2	120	
6. Rinse.....	9	5	135	Sour (6)
7. Rinse.....	9	2	120	
8. Rinse.....	9	15	120	Sodium thio- sulfate (3) ²
9. Rinse.....	9	15	120	
10. Rinse.....	9	15	120	

¹ Gallons. Kerosene must be secured through normal supply channels.

² Must be secured through normal supply channels.

5. DECONTAMINATING COTTONS AND LINENS.

The formula for decontaminating cottons and linens is as follows:

Operation	Water level (in.)	Time (min.)	Temperature (deg. F.)	Supplies (oz.)
1. Suds-----	8	5	100	Detergent (3)
2. Suds-----	8	5	140	Detergent (3)
3. Suds-----	8	5	140	Detergent (3)
4. Rinse-----	10	5	140	
5. Rinse-----	10	5	120	
6. Rinse-----	10	5	120	

APPENDIX IV

SAMPLE FORMS

1. LAUNDRY LIST.

Pin Letter and Number _____
Date _____, 19____

QUARTERMASTER LAUNDRY

Name _____
Initials and Last Four Letters
of Serial Number _____
Regt. _____ Bn. _____ Co. _____
Area _____

---- Barracks bag	---- Shirts, cotton, khaki
---- Belts, web	---- Shirts, flannel, od
---- Caps, work	---- Socks (pair)
---- Drawers, cotton	---- Sweaters
---- Drawers, wool	---- Trousers, cotton
---- Handkerchiefs	---- Trousers, work
---- Jackets, field	---- Undershirts, cotton
---- Jackets, work	---- Undershirts, wool
-----	-----
-----	-----
-----	-----

Marker

Checker

2. SUGGESTED WEEKLY LAUNDRY REPORT.

Unit (Co., Plat., Sec.) _____
Location of CP _____ APO _____
Commanding general _____
Coordinates _____

Section I. LAUNDRY DATA

Number of trailers operating.....

Trailer hours in operation.....

Trailer hours idle.....

Trailer hours lost through repair.....

Number of pounds processed:

Bulk.....

Salvage.....

Hospital.....

Individual.....

Number of bundles processed.....

Section II. OPERATING SUPPLIES USED

Item	Used	Balance ¹
Fuel oil.....		
Gasoline.....		
Lube oil.....		
Soap.....		
Soda ash.....		
Sour.....		

¹ Estimated to be a _____ supply.

Section III. REMARKS

List spare parts, supplies, or tools critically short.
List remarks pertaining to proper functioning of
laundry units.

APPENDIX V

BLOCKING AND BRACING FOR RAIL SHIPMENT

The following are the minimum requirements for securing the two-trailer type laundry units to flat or drop end gondola cars (see fig. 15):

Item	No. of pieces	Description
1	-----	Brake wheel clearance.
2	4	Each shall consist of 2 pieces, 2- by 4- by 24-inch (pattern C). Nail both pieces, side by side, to the base of items 3 with 4 forty-penny nails in each.
3	4	6- by 8- by 24-inch blocks (pattern B). Locate 45° portion of blocks against front and rear of wheels. Nail heel of block to items 2 and car floor with 3 sixty-penny nails, and toenail that portion under tire to car floor with two sixty-penny nails.
4	2	Each shall consist of 3 pieces, 2- by 4- by 36-inch (pattern A). Nail one wide surface of the intermediate piece to one of the edges of the top piece with 5 twenty-penny nails. Nail the bottom piece to the other wide surface of the intermediate piece with 5 twenty-penny nails. One side of the 3 pieces must be flush. Locate against outside of each tire and nail to car floor with 4 sixty-penny nails.

Item	No. of pieces	Description
5	2	Each shall consist of 2 pieces, 2- by 4- by 24-inch (pattern C). Nail 2 lower pieces to car floor, one on each side of lunette, with 4 forty-penny nails, and nail top pieces to the one below with 4 forty-penny nails.
6	1	2- by 4- by 24-inch (pattern C). Center above lunette ring and nail each end to items 5 with 4 forty-penny nails.
7	2	Each shall consist of 4 pieces, 2- by 4- by 24-inch (pattern C). Locate against items 5 lengthwise of car. Nail each lower piece to car floor with 4 forty-penny nails and nail top pieces to the ones below with 4 forty-penny nails.
8	1	Brace (pattern D) height to suit. Place behind lunette ring and toenail to car floor with 8 forty-penny nails.
9	2	2- by 4-inch, length to suit. Locate against each side of item 8 and toenail to item 8 and car floor with 3 forty-penny nails at each location.
10	1	4 strands No. 8 Ga. black annealed wire. Loop around tongue and secure to opposite stake pockets. Twist taut with rod or bolt on both sides of tongue.
11	2	6 strands No. 8 Ga. black annealed wire. Attach one to each tongue brace and nearest stake pocket, and twist taut with rod or bolt.

Note. Items 5, 6, and 7 are not required when items 9 and 10 are used, or vice versa.

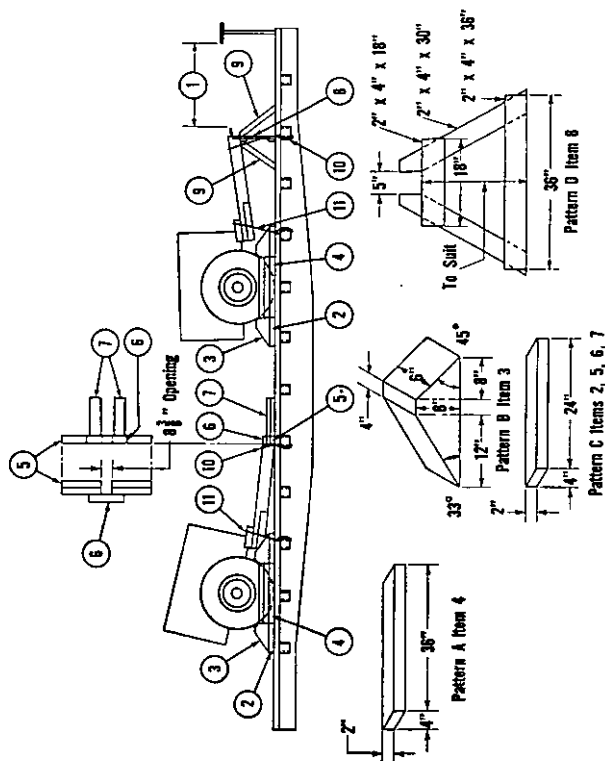


Figure 15. Blocking and bracing the laundry trailers for rail shipment

APPENDIX VI

UNIT PROFICIENCY STANDARDS

The following is a checklist for training inspection of quartermaster laundry company, semimobile.

1. BASIC. **a.** Do the men have knowledge of first aid?

b. Are the men trained in map reading?

c. Are the men trained in proper conduct if captured?

d. Are the men trained in use of gas mask and other individual items of equipment for protection against chemical attack?

e. Are the men oriented in the mission of the unit?

f. Are the men trained in the proper use of their weapons?

g. Has each man completed his basic military training?

2. TECHNICAL. Are the personnel able to perform their primary mission? (Determine by spot check of each of the following types of operations. Set up special tasks for each.)

a. Laundry foremen.

b. Laundry mechanics.

c. Automotive Mechanics.

d. Engine operators.

e. Washmen.

f. Tumblermen.

g. Markers.

h. Folders and resizers.

3. HOUSEKEEPING AND SUPPLY. a. Is the unit supply section trained to function properly?

b. Is the unit mess section trained to function properly? To eliminate waste?

c. Is the unit administrative section trained to function properly?

4. PRACTICAL TEST OF COMPLETE UNIT. a. Set up problems involving conduct of the unit in the following operations:

(1) Selection of camp site and setting up of laundry for operation.

(a) Does site afford the best facilities for properly servicing the troops?

(b) Is proper distribution made of units?

(c) Are roads and road conditions used to advantage?

(d) Are reserve units available for emergency relief?

(2) Defense of bivouac.

(a) Is the plan of defense tactically sound?

(b) Are all personnel armed with permanently assigned weapons?

(c) Does the plan for issue of arms and ammunition efficiently meet the requirements of speed, safety, and the proper safeguarding of weapons?

(d) Is the plan adequate for defense against ground troops? Paratroops? Air attacks?

(3) Demolition of equipment.

(a) Is the demolition plan technically sound?

(b) Is the plan tactically sound?

(c) Are all key personnel acquainted with the demolition plan and capable of performing it?

(4) Showdown inspection of organizational and individual personal equipment.

(a) Is organizational equipment complete and serviceable?

(b) Is individual equipment complete and serviceable?

b. Based upon the above problems, determine the following:

(1) Can the unit perform its primary mission?

(2) Can the unit service a designated number of troops?

(3) Can the platoon perform its primary mission when it is operating as a separate unit?

(4) Can the section perform its primary mission when it is operating as a separate unit?

c. Set up a problem involving the unit in offensive ground action as a combat rifle unit (covering tactical training of infantry soldier). Can the unit perform this mission in a (satisfactory) (very satisfactory) (excellent) manner?

d. Check operation and maintenance of the organizational equipment of the unit.

(1) Are the vehicles properly operated?

(2) Is the equipment properly maintained?

(3) Is preventive maintenance practiced?

(4) Are technical maintenance and operations instructions provided for each vehicle?

APPENDIX VII

GLOSSARY

Acid—A chemical substance having characteristic reactions and always containing hydrogen in its composition. (See Sour.)

Active alkali—Alkali which is available for detergent use. Both active and inactive alkali may be present in the same solution.

Alkali—A substance which is chemically the opposite of acid. It has a distinctive reaction with water, forming an "alkaline" solution.

Alkaline-detergent—A water soluble product having an alkaline reaction and detergent qualities but containing no soap. (See Detergent.)

Anhydrous soap—Pure soap free from water and all other concomitants.

Assembling—Bringing together, after washing and extracting, the various classifications in the bundle.

Base—A chemical substance (hydroxide) capable of combining with an acid to form water and a salt.

Bicarbonate—A chemical substance in which an alkali is over neutralized or saturated with carbon dioxide. Modified soda is part bicarbonate.

Bleach—A substance that whitens. Common among these substances are chlorine bleach, peroxides, and reducing agents, such as the sulphites and oxalic acid.

Bleach suds—A suds operation, usually the last suds in a washing formula, where bleach is applied. Bleaching in the last suds is common practice to save time.

Bleed—Spreading of loosened color into another section of the fabric.

Break—A preliminary or starting bath of a washing formula, designed to wet down, loosen, and remove as much of the surface soiling as possible.

Break compound—Any detergent compound used in the initial operation of a washing formula.

Build soap—A mixture of soap and one or more alkaline detergents, containing not more than 50 percent anhydrous soap.

Builder—Any substance added to soap to increase its efficiency under the conditions in which it is being used.

Building—The use of an alkali to raise the detergent efficiency of a soap solution.

Caustic—The hydroxide or hydrate type of alkali, commonly known as caustic soda or lye. When used as a builder, this alkali is destructive and discoloring to cotton. This type of alkali is also very difficult to rinse.

Concentration—The strength of a certain solution.

Detergent—Any material which aids in washing.

Detergent soap powder—A mixture of soap and one or more alkaline detergents, containing 25 to 50 percent of anhydrous soap.

Extractor—A machine used to remove water from fabrics by centrifugal force.

Fast—Descriptive of dyes which will not fade or change shade by exposure to washing processes, sunlight, perspiration, etc.

Formula—The complete schedule of application of detergents and other supplies in laundering.

Fugitive—Pertaining to colors which are uncertain and tend to bleed or run in the washing process.

Hardness—Condition due to the presence of dissolved minerals in water.

Mechanical action—The combined squeezing and pounding effect produced by a washer in action.

Neutral—Neither acid nor alkaline.

Overload—Loads in excess of the maximum rated capacity of the washer, extractor, or tumbler.

Soap specks—Either lime soap deposits or the greasy portion of soap produced by decomposition from heat or sour, etc. Very difficult to remove from goods.

Soda ash—Sodium carbonate. A moderately strong alkali.

Sour—A term used to designate an acid. The sour used by mobile laundries is a finely powdered mixture of sodium silicofluoride and sodium acid fluoride with 1 percent of antichlor compound.

Suspension—The picking up of dirt from a fabric and holding it in the liquid so that it may be discharged.

Volatile—A substance easily evaporated.

Water level—The height of the water inside the washer cylinder.

Zero soft water—A water free from water-hardening salts.

INDEX

	<i>Paragraph</i>	<i>Page</i>
Air movement:		
Packaging and packing.....	58c	82
Personnel and baggage.....	58d	82
Planning for movement.....	58a	82
Arctic sanitation and hygiene.....	9d	11
Armorer.....	25b	29
Army service area laundry.....	4b	3
Army training programs.....	10	13
Assignment:		
Army service area.....	4b	3
Clothing exchange and bath units.....	5b	4
Corps.....	4b	3
Medical Corps installations.....	5c	5
Reclamation and maintenance installations.....	5a	4
Separate platoons and sections.....	4e	3
Small land mass operations.....	4d	3
Automobile mechanics.....	25b	29
Baggage detail, rail movement.....	55c	74
Basic military training.....	10a	13
Bath clothing exchange units.....	5b	4
Bivouac, during motor movement.....	53f	65
Bivouac security.....	50b	62
Bivouac selection.....	9d	11
Blocking and bracing.....	56c; app. V	77, 99
Bugler.....	25b	29
Bulk work.....	34b	48
Bundle work:		
Detailed.....	36a	49
General.....	34a	47
Cadre.....	11	13
Cadre school.....	9b	8
Camouflage.....	28d, 51	37, 63
Capabilities:		
Company.....	6	5
Platoon.....	6	5
Section.....	6	5
Capacities.....	40b	55

	<i>Paragraph</i>	<i>Page</i>
Company:		
Clerk.....	25b	29
Commander, duties of:		
Air movement.....	58a	82
General.....	25a	28
Rail movement.....	54b, 55a-e	73, 74
Equipment.....	16	16
Headquarters, duties of:		
Commander.....	25a	28
Personnel.....	35b	29
Convoy serial.....	53a	65
Cooks.....	25b	29
Decontamination of clothing.....	38; app. III	53, 94
Defense plan.....	50b	62
Demolition.....	51b	63
Detraining.....	55f	74
Drain tub.....	15b	16
Drying process.....	36c	51
Drying tumbler trailer:		
Drying tumbler.....	15c	19
Engine-generator.....	15c	19
Hose reel and hose.....	15c	19
Tabulated data.....	App. II	93
Engine-generator set.....	15c	19
Engine operators.....	23c	25
Entraining officer.....	56a	77
Equipment:		
Company.....	16	19
Platoon.....	16	19
Section.....	16	19
Extractor:		
Description.....	15b	16
Use.....	36c	51
Field:		
Sanitation.....	9d	11
Training.....	9c	10
First sergeant.....	25b	29
Fixed laundries.....	5e	5
Folders and resizers.....	23e	26
Foremen, laundry.....	23a, 24b	25, 27
Formulas.....	35b; app. III	49, 94

	<i>Paragraph</i>	<i>Page</i>
Freight shipments:		
Transportation requirements.....	54	73
Reports required for separate shipment.....	55g	74
Generator.....	15c	19
Glossary.....	App. VII	105
Heater, water.....	15b	16
Hose reel and hose.....	15c	16
Individual bundle work, description:		
Detailed.....	36a	49
General.....	34a	47
Intake strainer.....	32c	45
Laundry:		
Capacities.....	40	55
Foremen:		
Platoon sergeant.....	24b	27
Section leaders.....	23a	25
Mechanics.....	24c	28
Operations.....	35	48
Procedure.....	36	49
Superintendent.....	25b	29
Work.....	34	47
Leveling the trailers.....	32c	45
List, laundry.....	App. IV	97
Loading plans, motor movement.....	53a	65
Lucky bag.....	36d	52
Maintenance:		
Operator and organizational.....	19	22
Preventive.....	18	21
Records.....	21	23
Responsibility.....	17	21
March graphs.....	53b	71
Markers.....	23c	26
Marking and sorting.....	36a	49
Marking pins.....	34a	47
Mechanics:		
Automobile.....	25b	29
Laundry.....	24c	28
Medical Corps installations.....	5c	5
Mess steward.....	25b	29

	<i>Paragraph</i>	<i>Page</i>
Mission:		
Company.....	3	1
Mobile laundry teams.....	5d	5
Motor movement:		
Assignment of jobs.....	53d	71
Bivouac.....	53f	73
Convoy serial.....	53a	65
Loading plan.....	53a	65
Rate of march.....	53e	72
Report to commander of new station.....	53c	71
Motor sergeant.....	25b	29
Mobilization training programs.....	10	13
On-the-job training.....	9c	10
Opening-up operations.....	47	59
Operations:		
Closing-out.....	49	60
Extreme cold.....	39a	54
Extreme heat.....	39b	55
High altitude.....	39c	55
Laundry.....	35	48
Opening-up.....	47	59
Setting-up.....	26	31
Taking-down.....	27	34
Taking-over.....	48	60
Operating shifts.....	40a	55
Packaging.....	56b, 58c	77, 82
Permeable protective clothing, laundering:		
Impregnite protected.....	37a	53
Impregnite removed.....	37b; app. III	53, 94
Personnel administrative technician.....	25b	29
Pin system of identification.....	34a, 36a	47, 49
Pin trays.....	34a, 36a	47, 49
Pins, marking.....	34a	47
Pitching tents.....	26b, c	32, 34
Platoon:		
Equipment.....	16	19
Leaders.....	24a	26
Sergeant.....	24b	27
Portable pump.....	15b	16
Positioning the trailers.....	32b	45
Preventive maintenance.....	18	21

Production:

Rate	40b	55
Records	41	56

Rail movement:

Baggage detail	55c	76
Blocking and bracing	56c; app. V	78, 99
Detraining	55f	77
Duties of company commander	55a-e	74
Entraining officer	55a	74
Transportation officer	54b	75
Transportation requirements	54a, b	75

Reassembling	36d	52
Reclamation expectancy	6b	5
Reclamation and maintenance installations	5a	4
Reconnaissance	28	36
Record clerk	23b	25

Records and reports:

Maintenance	21	23
Production	41	56
Technical	42a	57
Unit journal	43	57

References	App. I	88
------------------	--------	----

Resizers and folders	23e	26
Resizing	36e	53
Sanitation, field	9d	11
School training	8	7

Section:

Equipment	16	19
Leaders	23a	25

Security:

Bivouac	50b	62
Individual	50c	63

Setting up laundry equipment	26	31
Shifts	40a	55
Site checklist	29	37
Site selection	29	37
Sorting	36d	52

Supplies, laundering:

Soap	33b	46
Soda ash	33d	47
Sour	33c	47

	<i>Paragraph</i>	<i>Page</i>
Supplies, laundering (continued)		
Water.....	33a	46
Supply:		
Authorized for laundry.....	45c	59
Handling.....	46	59
Methods of obtaining.....	45	58
Sources.....	44	58
Supply sergeant.....	25b	29
Table, marking and sorting.....	36a	49
Taking down laundry equipment.....	27	34
Terms, glossary of.....	App. VII	105
Terrain.....	28b	36
Trailers, laundry.....	15	15
Training:		
Programs:		
Field.....	9c	10
On-the-job.....	9c	10
Schedules.....	9	8
School.....	8	7
Two-trailer-type equipment:		
Description.....	15a-c	15
Positioning trailers.....	32b	45
Setting up equipment.....	26	31
Taking down equipment.....	27	34
Tumblermen.....	23d	26
Tumbling.....	36c	51
Unit journal.....	43	57
Unit proficiency standards.....	App. VI	102
Washer trailer:		
Extractor.....	15b	16
Portable pump.....	15b	16
Stationary drain tub.....	15b	16
Tabulated data.....	App. II	93
Washer.....	15b	16
Water heater.....	15b	16
Washing.....	35a	48
Washmen.....	23d	26
Water.....	28a	36
Water discharge point.....	29b	37